Cranfield UNIVERSITY

NADINE M. ITANI

POLICY DEVELOPMENT FRAMEWORK FOR AVIATION STRATEGIC PLANNING IN DEVELOPING COUNTRIES

SCHOOL OF ENGINEERING
Department of Air Transport

DOCTOR OF PHILOSOPHY (PhD)
Academic Years: 2010 - 2015

Supervisors: Dr. John F. O'Connell
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This thesis is submitted in partial fulfilment of the requirements for the degree of Doctor of Philosophy (PhD)

ABSTRACT

There exists no predefined framework for aviation policy making and development. While aviation policy planning in most developed countries comes as a result of institutional and industry coordination and is embedded within other national policies addressing the welfare and growth of the country, it is found that in many cases in less developed countries (LDCs), aviation policy planning is often influenced by political pressures and the interests of fund donors. The complexity of this situation in the developing countries results in aviation plans that represent stand alone studies and attempt to find solutions to specific problems rather than comprehensive aviation plans which fit well the country's competitiveness profile and are properly coordinated with other national policies for achieving medium and long-term objectives. This study provides a three-stage policy development framework for aviation strategic planning based on situational analysis and performance benchmarking practices in order to assemble policy elements and produce a best-fit aviation strategy.

The framework builds on study results that indicate an association between air transport sector performance and aviation policy strategies, arguing that it is not sufficient to simply describe performance but also to be able to assess it and understand how policymakers can use strategic planning tools to affect the air transport industry efficiency levels. This can be achieved by recognizing the level of the country's stage of development and working on enhancing the policy elements that produce better output and induce more contributions by aviation to the national economic development and connectivity levels.

The proposed aviation policy development framework is systematic and continuous. It helps policymakers in LDC to manage uncertainty in complex situations by allowing them to defend, correct and re-examine the policy actions based on a forward thinking approach which incorporates the contingency elements of the policy and tracks the developments that can affect the odds of its success. The framework's elements and its flow of process are explained by providing an illustrative example applied to the Hashemite Kingdom of Jordan.

KEY WORDS:

National competitiveness; performance benchmarking; peer analysis; air transport system; civil aviation; scenario analysis; aviation regulations.

ACKNOWLEDGEMENTS

Five years have passed since I began my research. I would like to take this opportunity to express my gratitude to those who have supported me academically, technically, mentally and emotionally and have been instrumental in the successful completion of this thesis.

I would like to show my greatest appreciation to my supervisors Dr. John F. O'Connell and Dr. Keith J. Mason. Without their support and guidance this research would not have materialized. Also, I would like to thank all faculty members and staff of the Department of Air Transport at Cranfield University who contributed to the success of this work.

I also thank all who offered critical reviews and comments on parts of this research i.e. the *Journal of Transport Policy*, *Journal of Transport Geography* and the Air Transport Research Society (ATRS), and for being extremely helpful in improving the ultimate quality of this study.

A word of appreciation goes to the committee members of the *ICAO Assad Kotaite's graduate and post-doctoral fellowship fund* for their confidence in selecting me to be the first recipient of the ICAO award on 25 October 2011, based on this research topic in the field of civil aviation in developing countries.

A special thanks to my family. Words cannot express how grateful I am to my mother and father for all of the sacrifices that they have made on my behalf. I also extend my sincere gratitude to my husband and my two sons who withstood the regular absence of a wife and mother from home to allow me to spread my wings and fly after my dreams. Huge thanks to my little soul-sister for her unconditional love and unlimited supply of motivational quotes and PhD comic strips.

My appreciation goes as well to my business associates and co-workers for their belief in my potential and their help in making the office a study-friendly place.

Thank you all.

DEDICATION

To all the women of the Middle East,

"An educated girl will empower her community, lift her country and change the world."

(Anonymous)

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LIST OF EQUATIONS

LIST OF ABBREVIATIONS

ACI	Air Connectivity Index
ADC	Aqaba Development Corporation
ADP	Aéroports de Paris
ANSP	Air Navigation Service Provider
ASA	Air Service Agreement
ASEAN	Association of South East Asian Nations
ASEZA	Aqaba Special Economic Zone Authority
ATC	Air Traffic Control
BS	Boot strapping
CAA	Civil Aviation Authority
CAGR	Compound Average Growth Rate
CANSO	Civil Air Navigation Services Organization
CARC	Civil Aviation Regulatory Commission
CARs	Civil Aviation Regulations
CIDA	Canadian International Development Agency
CRS	Constant Returns to Scale
DEA	Data Envelopment Analysis
DMU	Decision Making Unit
EU	European Union
FSNC	Full Service Network Carrier
GCI	Global Competitiveness Index
GDP	Gross Domestic Product
GCR	Global Competitiveness Report
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IFC	International Finance Corporation
IMD	Institute of Management Development
IMF	International Monetary Fund
IT	Information Technology
JAC	Jordan Airports Company
JCAR	Jordan Civil Aviation Regulations
JICA	Japan International Cooperation Agency
LACAC	Latin America Civil Aviation Commission

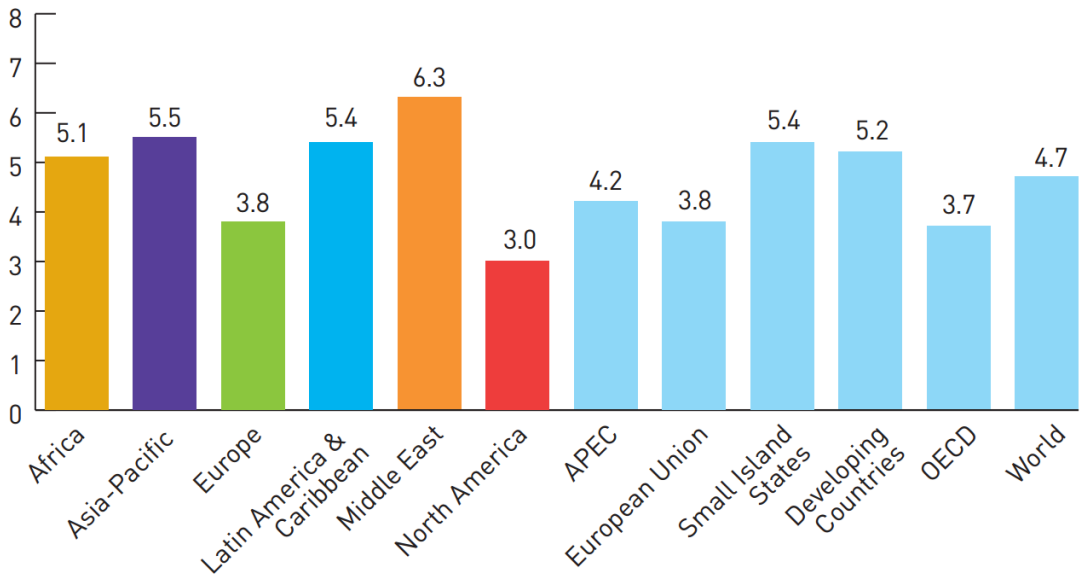
LCC	Low Cost Carrier
LDC	Less Developed Country
MENA	Middle East and North Africa
MoT	Ministry of Transport
NCADP	National Civil Aviation Development Plan
PSP	Private Sector Participation
QAIA	Queen Alia International Airport
RJ	Royal Jordanian
SEM	Structural Equation Modelling
SPFs	Stochastic Production Frontiers
TAPs	Technical Assistance Projects
UN	United Nations
VRS	Variable Returns to Scale
WB	World Bank
WEF	World Economic Forum

1 CHAPTER ONE: INTRODUCTION

1.1 Research motivation

In the last decade and despite the apparent downside risks in the global economy, the demand for air transport has witnessed a steady increase in passengers and revenue, and emerging markets have seen even faster growth than advanced economies. The aviation sector in the Middle East for instance grew at 11% from 2008 to 2013 in Revenue Passenger Kilometres (RPKs) in contrast to the overall industry which experienced a compound annual growth rate (CAGR) of 4.3% (IATA, 2014). Moreover, the Middle East is projected to lead the world's growth in international traffic for the coming decades (Figure 1).

Figure 1: Projected annual growth rate for international passengers' traffic by region (2012-2032)



Source: (ATAG, 2014)

To capitalize on this growth, many governments and air service operators in developing economies have made significant investments to upgrade infrastructure and aircraft fleets. Middle East and African carriers have ordered more than 1,000 aircraft representing around 43% of the total number of aircraft in service in those territories (CAPA, 2014b). Almost US$110 billion investment

in airport projects in the Middle East, Africa and Latin America will increase these regions' capacity by more than 600 million passengers annually by 2020 (ACI, 2013).

Besides infrastructure and fleet expansion, the other required factor for a rapidly growing aviation sector is a competent and comprehensive regulatory model to oversee it. Until today, the regulatory systems in most LDCs have not been able to keep up with the sector's growth, for a number of reasons:

1. Many of the LDCs do not have comprehensive national or regional policies that specify goals and identify benchmarks for the aviation sector.
2. There exist overlapping functions and tasks across diverse aviation bodies such as regulators, airlines and airports.
3. Most of the developing countries' governments depend on international banks and bilateral aid agencies to fund their aviation related projects which make most of the sector's development plans under the influence of the interests of investors and political pressures.

Insofar as these factors relate either directly or indirectly to the status of the aviation regulatory systems in developing countries, there is a considerable shortage of detailed research in the area of devising state-level aviation strategies. This study addresses these concerns through exemplifying the argument that the availability of an aviation strategic planning framework:

- Represents a management tool that can help aviation policymakers in developing countries achieve high strategic performance; develop a clear understanding of the industry's competitive dynamics; assess the country's national ability to compete; and identify responses to tackle uncertainty.
- Provides an effective way to synthesize country level information with strategic planning principles and apply this information and principles to aviation policy development tasks.

1.2 Aim and objectives

In accordance with the research motivation, this study has the following research aim, which is supported by four interrelated research objectives:

Aim:

To design a policy development framework for civil aviation strategic planning in developing countries based on national competitiveness capacity and international best practices.

Objectives:

1. To *explore* current practices in devising aviation strategic plans in most countries of the developing world.
2. To *identify* the macro-environment factors that impact the air transport output on a national level.
3. To *demonstrate* the world's best-in-class aviation policy scenarios.
4. To *relate* aviation policy decisions to the air transport sector's efficiency levels through a two-stage performance benchmarking process.

The key purpose, linking objectives 1, 2 and 3 is objective 4. Herein lays the main research contribution as it attempts to provide a robust model which associates the policy elements with the other national determinants affecting the output of the air transport sector.

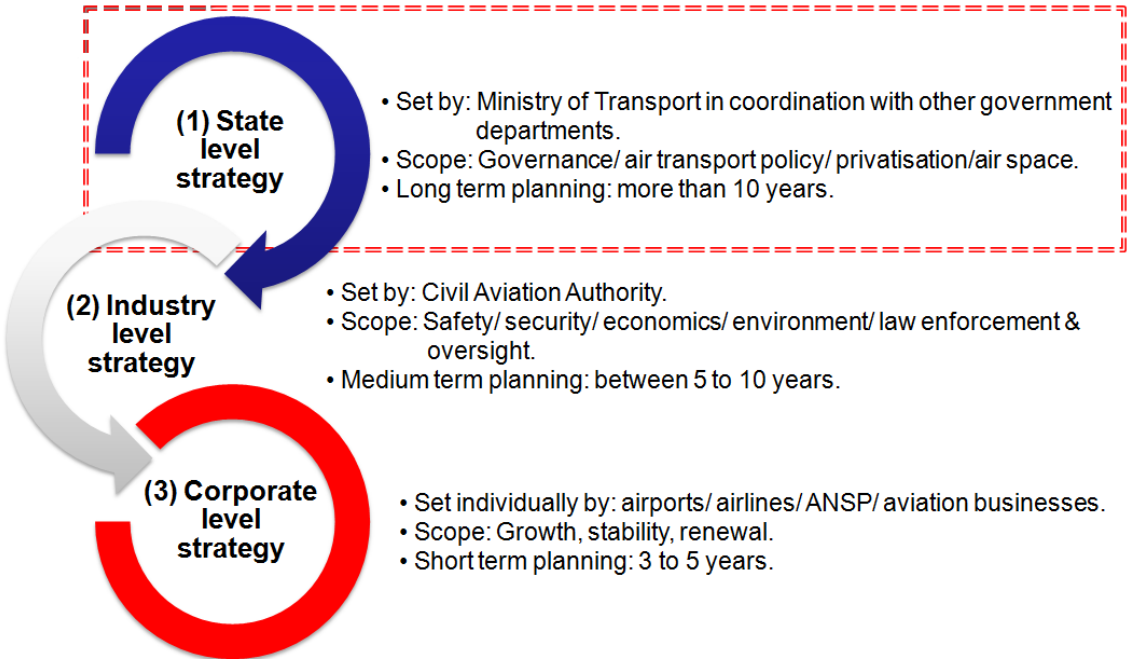
1.3 Scope and definitions

There is no common definition for aviation strategic planning and the term may refer to various interpretations and scopes. This makes it necessary to specify the precise definition and the scope used for this study.

Aviation strategic plans fall into three main categories: state-level aviation strategy; industry level strategy; and corporate level strategy (Figure 2). Each of these plans is set by different entities and they vary in scope and in time range. This study is addressing state-level aviation strategy which is designed by the highest authority in charge of the aviation sector in a country, i.e. the Ministry of

Transport (MoT) in coordination with other government agencies dealing with defence, tourism, economics and trade. The study does not explicitly account for the other levels of strategy despite the fact that the highest form of aviation strategic planning affects both industry level and corporate level plans.

Figure 2: Different levels of aviation strategies



Source: (Flouris and Oswald, 2006; Lawton, 2007)

In this study, the state-level aviation strategy is also referred to as the National Air Transport Plan which is the basis for national civil aviation development, since all of the other elements of civil aviation are carried out in support, and for the benefit, of air transport. To a large degree, the strategic plan concerns the definition of national policy towards air transport to enable the industry to develop nationally, as well as internationally. This generally includes basic policy inputs addressing the three fundamental areas: (a) governance through institutional and structural definitions of the legal framework for civil aviation administration; (b) liberalisation of air services through policies determining the government approach towards market access, international air service agreements and prospects for new markets; and (c) privatisation policies defining the government attitude towards private sector participation (PSP) in

the investment, management or ownership of aviation infrastructure mainly airports and airlines.

In terms of privatisation policies, this research focuses on government policy towards the privatisation of airports. This is because at an international level, airline privatisation started much earlier than for airports with the deregulation policies in USA in 1978. Additionally, in developing countries the privatisation of national air carriers has moved at a faster pace unlike the privatisation and commercialisation of hub airports. Historically, airports have been considered as public utilities that are an essential component of the national aviation system for both connectivity and security reasons (Socha and Kavka, 2011).

Literature in the field of strategy makes a distinction between strategy formulation and strategy implementation. The first is referred to as strategic planning that involves devising strategies to meet specific objectives and determining which resources this will require, while strategic management is therefore the process of formulating, implementing and controlling the strategy (Coulter, 2005). The principal interest for this study is the strategic planning process. All the functions that relate to the implementation or assessment phase of the strategic plan fall outside the scope of this research.

When it comes to classifying countries according to their level of development, there is no criterion that is generally accepted. The United Nations (UN), International Monetary Fund (IMF), World Bank (WB) and other international agencies use different methodologies to classify countries as either developed or developing[a]. Despite the differences in methodologies and indicators used for classification purposes, in this research the term *developed countries* is used to denote high income countries, while the term *developing countries* refers to middle and low income nations. Table 1 outlines a list of the developing countries with the analysed countries marked in capital bold font to indicate the

[a] The literature is replete with competing terminologies to classify countries; examples include poor/rich, backward/advanced, underdeveloped/developed, undeveloped/developed, North/South, late-comers/pioneers, Third World/First World, and developing/industrialized.

diversity of the geographical mix that this study encapsulated. Using the WB's classification is the most practical solution for the purpose of this study since it permits an in-depth analysis that complements the indexing system used by the World Economic Forum (WEF) to produce the Global Competitiveness Report (GCR). The latter represents the foundation of the macro-environment analysis performed at forward stages of the research.

Table 1: List of developing countries with sampled nations in capital bold font

East Asia and Pacific	Europe and Central Asia	Latin America and Caribbean	Middle East and North Africa	South Asia	Sub-Saharan Africa
Cambodia	Albania	Argentina	Algeria	Afghanistan	Angola
CHINA	Armenia	Belize	Djibouti	Bangladesh	Benin
Fiji	Azerbaijan	Bolivia	**EGYPT**	Bhutan	Botswana
Indonesia	Belarus	**BRAZIL**	Iran	**INDIA**	Burkina Faso
Kiribati	Bosnia	**COLOMBIA**	Iraq	Maldives	Burundi
Korea	Bulgaria	Costa Rica	**JORDAN**	Nepal	Cameron
Lao	Georgia	Cuba	**LEBANON**	Pakistan	Central African
MALAYSIA	**HUNGARY**	Dominican	Libya	Sri Lanka	Chad
Micronesia	Kazakhstan	**ECUADOR**	Morocco		Comoros
Mongolia	Kosovo	El Salvador	Syria		Congo
Myanmar	Kyrgyzia	Grenada	Tunisia		Côte d'Ivoire
New Guinea	Macedonia	Guatemala	Palestine		Eritrea
Palau	Moldova	Guyana	Yemen		Ethiopia
PHILIPPINES	Montenegro	Haiti			Gabon
Samoa	**ROMANIA**	Honduras			Gambia
THAILAND	Serbia	Jamaica			Ghana
Timor Leste	Tajikistan	**MEXICO**			Guinea-Bissau
Tuvalu	**TURKEY**	Nicaragua			**KENYA**
Tonga	Turkmenistan	Panama			Liberia
Vietnam	Ukraine	Paraguay			Madagascar
	Uzbekistan	**PERU**			Malawi
		St. Lucia			Mali
		St. Vincent			Mauritania
		Suriname			Mauritius
		Venezuela			Mozambique
					Namibia
					Niger
					NIGERIA
					Rwanda
					Senegal
					Seychelles
					Sierra Leone
					Somalia
					SOUTH AFRICA
					Sudan
					Swaziland
					Tanzania
					Togo
					Uganda
					Zambia
					Zimbabwe

Source: (World Bank, 2014b); Author

1.4 Research design and methodology

1.4.1 Research approach

Given the nature of the research topic and the geographic scope it is addressing, it is important to introduce an inductive thematic approach in addition to the traditional deductive approach. While inductive approach is more concerned with the generation of new concepts emerging from the analysed data, the deductive approach usually begins with a hypothesis and aims at testing predefined generalisations against existing concepts or practices. This combined research approach is adopted to ensure that the research objectives are met. The utilisation of conventional strategic planning concepts and paradigms is necessary in devising the strategic framework for the aviation policy development, since the literature review demonstrates the scarcity of research in the area of aviation strategic planning and management.

A qualitative approach is used to achieve objectives 1 and 3. The reviewed literature in terms of the evolution of strategic planning reveals the common steps to be included in the strategic planning framework which are: situational analysis; strategic decisions; and contingency elements, while the investigation of approaches on aviation planning indicates a variation between developed and developing countries. Elements of qualitative appraisal are also introduced in order to account for non-tangible impacts such as referring to the aviation policy scenarios practised by different countries by numbers from 1 to 18. Those numbers are purely indicative and do not have any numerical weight or impact (Table 7). Additionally a qualitative analysis is carried out on the development of the three main aviation policy pillars by summarising the results of previous studies on the impact of institutional governance, liberalisations and infrastructure privatisation on the growth of the air transport sector.

The numerical nature of objectives 2 and 4 necessitates quantitative analysis. The core quantitative model firstly gathers data across 113 countries (developed and developing) on the three main pillars of state aviation strategy, namely: (1) institutional governance of the aviation administration; (2)

liberalisation of air services; and (3) ownership and management model of hub airports. Additionally, data are gathered on 21 different indicators ranging from economic to social. These indicators are further categorized as either input or output variables of the air transport sector across 52 countries (developed and developing). Definitions of the variables and the related data sources are available in Appendix A.1 while a table including the list of the sampled countries with the values of the scores of variables is included in Appendix A.2. Distribution of sampled countries at different stages of development is presented in Appendix A.3.

Structural Equation Model (SEM) incorporating historical socio-demographic and macro-environment data is used to capture the national competitiveness indicators that have a significant impact on the levels of air transport contribution to employment and Gross Domestic Product (GDP); passenger traffic; and levels of air connectivity. To evaluate the significance of relationships among input and output indicators, a two phased approach is implemented comprising different statistical techniques, namely: SEM and Boot Strapping (BS). Structural equation models are statistical procedures for testing measurement, functional, predictive and causal hypotheses. Complementing multiple regression and ANOVA methods, among others, these multivariate statistical tools are essential if one is to understand many bodies of research and to conduct basic or applied research in the behavioural, managerial, health and social sciences (Bagozzi and Yi, 2012b). The structure of interrelationships is expressed in a series of relationships amongst dependent and independent variables. Unlike regression analysis, SEM tests multi-relationships simultaneously between the suggested independent and dependent variables (Hair et al., 2009) (Mooney and Duval, 1993). SEM is a conformity technique often used to measure the fitness of an assumed model of relationships to the provided data. In this study it is used to identify the significance of relationships among variables, irrespective of the fitness levels, since the focus of the research is identifying the significant variables rather than looking at the magnitude of this significance.

Due to the relaxation of the fitness requirements and the small sample size (52 countries) BS is employed where we draw repeated samples (1,000 iterations) from the original sample. BS estimates SEM parameters for the new sample and then determines the values for the parameter estimates. Specifically, BS is used to estimate the significance from repeated sampling (1,000 iterations) of the original sample (52 countries) to ensure that it is a representative sample of the population of the countries as a whole.

A two-stage Data Envelopment Analysis (DEA) model combined with truncated regression depends on the findings of the SEM model to identify the countries which are performing more efficiently and to relate the aviation policy to the country's relative efficiency levels in air transport sector. DEA is a relatively new 'data oriented' approach that estimates the maximum potential output for a given set of inputs, and has primarily been used in the estimation of efficiency. It helps to evaluate the performance of a set of peer entities (the Decision Making Units (DMUs)) that convert multiple inputs into multiple outputs. The method of DEA was first introduced by Charnes, Cooper and Rhodes in 1978. DEA provides a scalar measure of relative efficiency by comparing the efficiency achieved by a DMU with the efficiency obtained by similar DMUs. DEA assumes a set of observed DMUs, {DMU j; j=1,...,n}, is associated with m inputs, {xij ; i=1,...,m}, and s outputs, {yrj ; r=1,...s}. In the method originally proposed by (Charnes et al., 1978) the efficiency of the jth DMU is defined as follows.

Equation 1: Common measure of relative efficiency

$$\text{Eff} = \frac{\sum_{r} u_r y_{rj}}{\sum_{i} v_i x_{rj}}$$

where

yrj = the amount of the rth output from DMU j,
ur = the weight given to the rth output,
xij = the amount of the ith input used by DMU j,
vi = the weight given to the ith input.

Generally, a range of DEA models have been developed by different scholars to measure efficiency and capacity in different ways. These largely fall into two categories of being either input-oriented or output-oriented models. In the input-oriented model, DEA approach seeks the maximum possible proportional reduction in inputs while maintaining the outputs produced from each DMU. In the output-oriented model, this approach seeks the maximum proportional increase in outputs produced with a given level of inputs. In this study, the measures of efficiency are estimated through using the linear programming output-oriented DEA model.

Stage two of the analysis uses truncated regression to relate efficiency scores to factors seen to influence efficiency but are neither inputs nor outputs (Simar and Wilson, 2007; Hoff, 2007). In the aviation literature, the two-stage efficiency analysis has been applied by different scholars among them are (Scotti et al., 2012; Barros and Dieke, 2008).To examine the hypothesis that the efficiency of a country's air transport sector is determined by different contextual variables, a two-step approach is followed, estimating the truncated regression model shown below:

Equation 2: Truncated regression equation

$$\theta_{i,t} = \alpha_0 + \alpha_1 DEV_{i,t} + \alpha_2 LEB_{i,t} + \alpha_3 PUB_{i,t} + \alpha_4 MGT_{i,t}$$

where θ represents the DMU inefficiency score. Two types of exogenous variables are incorporated which are neither inputs nor outputs, but which nonetheless exert an influence on DMUs' performance: the first type influences the performance frontier, while the second has an impact on the countries' inefficiency scores. Stage of development *(DEV)* is the variable influencing the frontier. It represents the level of economic development of a specific DMU whether it is factor-driven, efficiency-driven or innovation-driven. The country's stage of development is computed from the (WEF, 2009a) classification of countries based on Michael Porter's theory of stages (Porter, 1998a). Information on income thresholds for establishing stages of development are

available in Appendix A.4, and a list of critical factors for competitiveness of countries at different stages of development is available in Appendix A.5. Three variables are instead considered as determinants of countries' inefficiency scores: the level of liberalisation of air services *(LEB)* which is computed from the World Trade Organization Air Services Agreement Projector database (WTO, 2012), and two dummies regarding the form of PSP in main/hub airports in the country (*PUB* equals one for publically owned and managed airports; *MGT* which equals one for public airports that are managed by private companies).

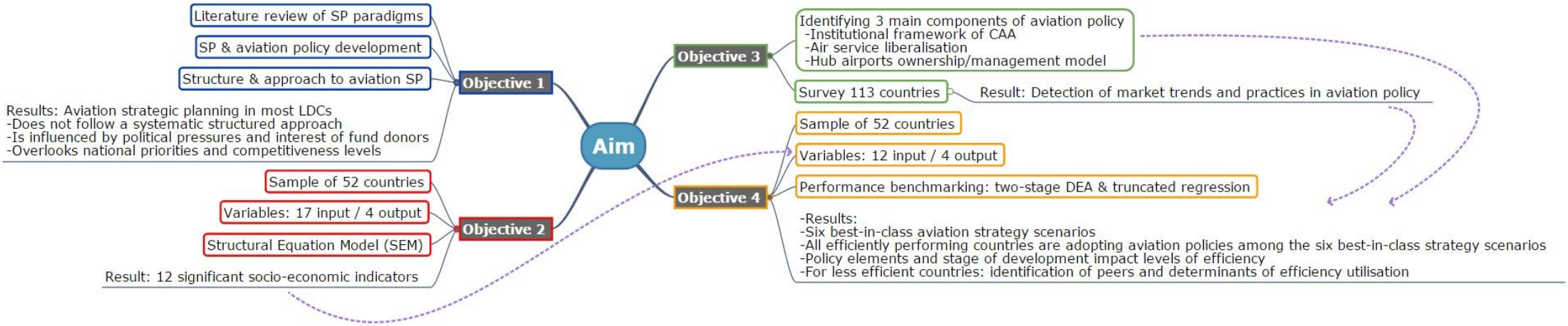
The work on the (i) macro-environment approach to aviation strategic planning has been presented in 2013 as a conference paper for the Air Transport Research Society (ATRS) conference in Bergamo, Italy. Additionally, the study on (ii) the realization of the best-in-class aviation strategy scenarios has also been presented for ATRS in Bordeaux, France in 2014. The research on the two mentioned topics has been submitted to the *Journal of Transport Policy* and published under two separate articles (Itani et al., 2014; Itani et al., 2015)[b].

Due to the nature of the topic under study and the need to understand the dynamics present within a single setting, a case study is chosen as the method of application for this research. The case study uses a concrete example to present the different phases of the policy making framework if it is to be developed for a developing country, in this case, the Hashemite Kingdom of Jordan.

This core research methodology is outlined by a mind map, which is presented in Figure 3.

[b]Apart from the above two publications, research work was carried out on the impact of emigrants' home-land relations on air travel demand in security volatile markets. The results are published in the *Journal of Transport Geography* (Itani et al., 2013).

Figure 3: Mind-map* of the research methodology



Source: Author

*Produced by “Wise Mapping” application. Available at: http://www.app.wisemapping.com

1.4.2 Data sources

This research depends on primary and secondary data sources where both types of data are reviewed against some of the assumptions raised and the results found in the literature review. The data sources of this research are categorized into the following groups: analytic, survey and archival.

- Analytic: To assess the significance of the relation among the factors of macro-environment and the levels of air transport output, access to country-level data on national competitiveness, on socio-economic indicators and on air transport output is necessary. Secondary data on the 21 variables included in the study are collected through desk research. Secondary data sources include international agencies reports published online, such as WEF Global Competitiveness Report (GCR); Global Peace Index (GPI); UN world statistics reports; ICAO-Data on total scheduled passengers; Oxford Economics reports on the economic benefits of air transport; and the WB Air Connectivity Index (ACI). Data on these variables are used to build the core quantitative assessment models of the research which are the SEM and the DEA models. Definitions of the variables and the related data sources are available in Appendix A.1 while a table including the list of the sampled countries with the values of the scores of variables is found in Appendix A.2.

- Survey: A survey was carried out in support of the analytical findings on the identified best-in-class aviation strategy scenarios. The survey aimed to collect data on the current decisions in state-level aviation policies. A questionnaire was created and sent out by email and facsimile to the CAAs of the 113 countries in the sample. The response rate was 40%. Data on the three main components of aviation policy for the rest of the countries were collected from secondary sources such as the countries' aviation authority official websites, official reports and aviation intelligence portals such as World Trade Organization Air Services

Agreement Projector (ASAP); CAPA airports profile; ICAO case studies on commercialisation, privatisation and economic oversight of airports and air navigation services providers. A list of the 113 surveyed countries is found in Appendix B.1 with the respondents in capital bold font. A copy of the questionnaire is available in Appendix B.2 including the replies received from 46 countries by fax or email.

- Archival: A myriad of historical data sources were targeted until the completion of the study. Through attending a series of international conferences and meetings, as well as air transport management and airport strategic planning modules at Cranfield University, significant industry and theoretical considerations were gathered, ranging from the strategic direction of the global air transport sector to the international development of multilateral and bilateral air service agreements and the evolution of economic oversight of airports. This is supported by a number of fundamental studies which have also been useful in assimilating the deductive aspects of the research. Search engines such as EBSCO, ProQuest, Elsevier-Science Direct, Emerald *inter alia* have provided the main source material for academic journals which were generally considered to be less biased than industry based studies, providing a useful counterbalance to some of the assumptions made in studies by Airports Council International, the International Air Transport Association (IATA), the Air Transport Action Group (ATAG), Oxford Economics Forecasting and Centre for Asia Pacific Aviation (CAPA). ICAO, WTO and the WB also generally tend to be more neutral data sources. With regard to the approaches in aviation policy development in the developing countries, there is a dearth of academic research into this topic with only handful air transport related journal articles found in the main literature search discussing corporate aviation strategies, also using the concepts of strategic management in civil aviation administrations was found in only two consultant reports.

1.5 Thesis structure

Given the before mentioned aim, objectives and methodological outline, the organization of the thesis is outlined in the following structure (Figure 4). The thesis is comprised of six chapters.

- Chapter one outlines the research motivation, aim, objectives and research approach, as well defining the scope and general assumptions upon which the research is based.

- Chapter two is divided into two sections. The first presents a literature review on the history and evolution of strategic planning paradigms in private and public organizations, while the second discusses strategic planning and aviation policy development through describing the context of national aviation strategic planning and the structure and approach of international organizations and funding agencies to planning aviation strategy at a national level.

- Chapter three highlights the significant impact of the national macro-environment factors on a country's air transport sector. A quantitative SEM approach is used to analyse the importance of air transport to the nations studied, including the significant competitiveness elements within the context of civil aviation strategic planning.

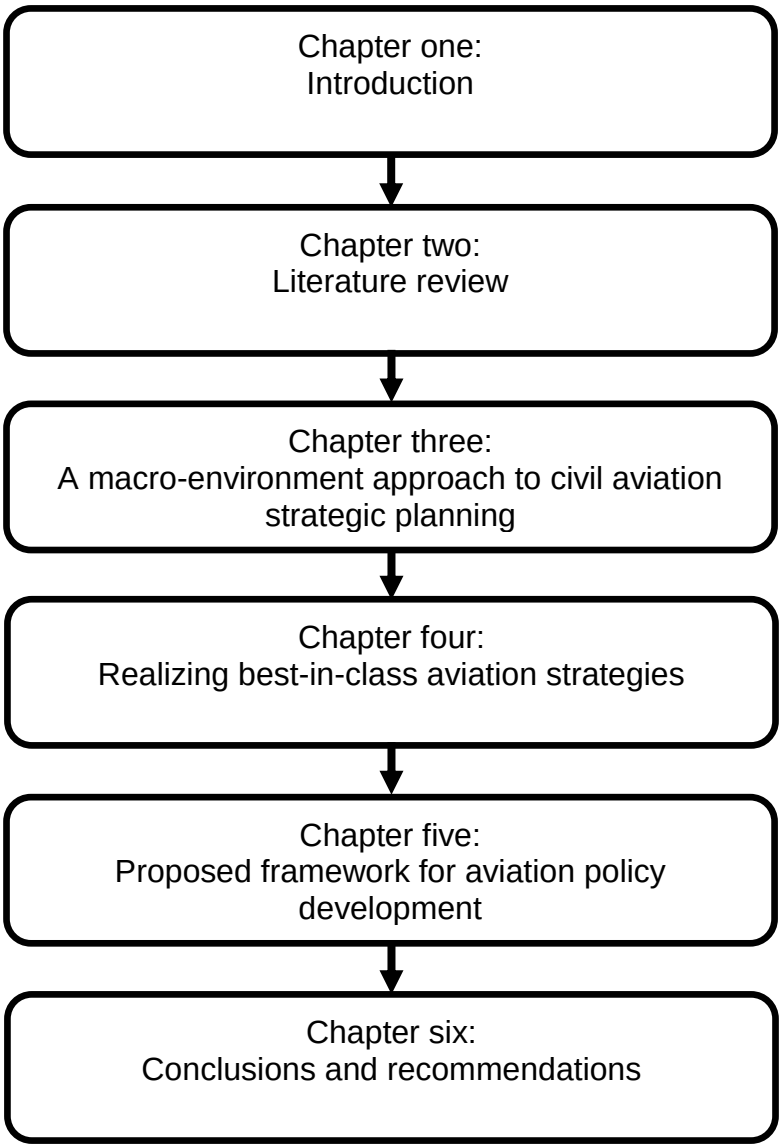
- Chapter four identifies the three main components of the civil aviation strategic planning on a national level. It uses a two-stage performance benchmarking model DEA—followed by truncated regression, to study the roles played by the macro-environment and industry-level performance in realizing best-fit national civil aviation strategies.

- Chapter five presents the stages, components and specifications of a systematic framework which can be used to design aviation policies on

national level. The end of the chapter provides an illustrative example on the aviation policy framework where the Hashemite Kingdom of Jordan is studied to explain the framework's elements and flow of process.

- Chapter six summarises the findings, presents the study's limitations and proposes areas for future research.

Figure 4: Thesis structure



2 CHAPTER TWO: LITERATURE REVIEW

Introduction

The aim of this literature review is to present a comprehensive picture on the history, evolution, practice and future of strategic planning as a stand alone discipline. It also inspects different approaches to strategic planning in the aviation sector.

The review starts with examining the roots behind the concept of strategy and the literature that creates the strategic planning framework. Strategic planning has been defined in many different ways; however, in this analysis, the aim is not to reach an agreement on its definition, but to present a summary on the literature concerning strategic planning.

The next part of the literature review relates to the introduction of strategic planning to public organizations and the diversified approaches to the practice of corporate planning in public organizations. The fundamental conversion of strategic planning application from the private to the public sector shows the progression of strategic planning towards becoming a management tool in government agencies. The analysis continues with a criticism of strategic planning and summarises some of the comments by other researchers on the strategic planning process.

The last section of this chapter discusses strategic planning and aviation policy development through describing the context of national aviation strategic planning and the structure and approach of international organizations and funding agencies to planning the aviation strategy at national level.

2.1 The notion of strategy

Strategy's roots can be traced back to ancient times i.e. in councils of wars. The "strategy" was initiated in the fourth century B.C. when Sun Tzu the Ancient Chinese Military General wrote about military strategy in his book: "The Art of War". Colin (Gray, 1999) in his writings on military strategy considers it a

practical subject. To him it is “a how to do it manual, the essential bridge that relates military power to political purpose” (p. 6).

Applying the concept of strategy to management was manifested during the 1950s and developed during the later decades. The advances in technology during World War II brought a complex environment and a large number of opportunities which firms had to tackle. In the 1960s, Chandler and Ansoff were the first to produce written works in strategic planning. (Chandler, 1962) defined strategy as the determination of the basic long-term goals and objectives of an enterprise, and the adoption of courses of action and the allocation of resources necessary for carrying out these goals. His main focus was on how companies have to develop and how to build administrative structures that would be appropriate to that development. With his managerial background, Ansoff presented the concept of associating strategy to financial gain through competitive advantage (Ansoff, 1965).

The concept of organizational strategy was developed by Andrews. He concentrated on the effect of strategy within an undefined environment (Andrews, 1971)(Andrews, 1971). Andrews believed that strategy is built through identifying the external opportunities and threats in the market in addition to the strengths and weaknesses within the company itself. The aim is to benefit from the opportunities and strengths and surpass threats and weaknesses. Believing that strategy is the main provider of the company’s identity and purpose, Andrews defined strategy as the pattern of objectives, purposes, goals and major policies and the plans for achieving those goals.

(Hatten et al., 1978)concluded that an effective strategy will usually describe the present and planned scope, domain of action, distinctive competencies as in skills and resources and the synergies that will result from the ways the organization deploys its skills and resources. Johnson and Scholes are considered to be two of the most renowned authors in the field of business strategy. They believe that the primary questions that strategy addresses are related to the company’s positioning and direction within its competitive surrounding. They introduced the notion of “strategic fit” which is the matching

between the company's scope of activities and its surroundings (Johnson and Scholes, 1997). Michael Porter who has done extensive research on competitive strategy argues that unsystematic strategic choices in market positioning or failing in implementing strategies lead firms to mediocre performance (Porter, 1985; Porter, 1987).

2.2 Strategic planning as a management tool

Strategic management has become an academic discipline helping managers to set a firm's strategic direction and coordinate its functional processes to the firm's strategy (Mintzberg, 1994; Steiner, 1997). Various academics and managers attribute the success of business organizations to a formal strategic planning system which provides a clearer view of the organization's course of development. Development in this context extends to include actions that change the core strategic orientation of the firm, such as its offerings, goals and objectives, and other production and operational systems (Ansoff, H.I.; Declerck, P.; Hayes, L., 1976).

The popularity of formal strategic planning rises from the inferred belief of the existence of a positive association between it and the organizational conduct (Dyson and Foster, 1980; Pearce et al., 1987). In this regard the function of planning extends to the responsibilities of different managers at different levels of the firm, each according to his type of responsibility (Bradford and Duncan, 2000).

Early researchers (Pearce et al., 1987; Rhyne, 1986) emphasized the "profit making purpose" of strategic planning and considered that a firm can establish a solid market position through focusing on financial performance. Later writers (Drucker, 2009; Bain&Company, 2011) concentrated on the concept of "change" as a basic goal for strategic planning. They considered that formal strategic planning is a catalyst for alterations to all the firm systems: structural, financial and operational rather than just being a tool for long-range-planning. To those researchers, strategic planning is a complete and systematic approach to connect the firm's objectives to its resources on the one hand, and help

managers to tackle challenging tasks as resource commitment decisions on the other.

2.3 Strategy formation schools of thought

There exist two different forms of strategic planning research: the process and the content. The former emphasizes how the planning was done and comprises two levels: formulation and implementation; the latter investigates the topics of strategic planning.

Early concepts of strategy looked at the company manager as a “designer” of strategies based on situational analysis of the firm. Then after the strategy implementation the company should be able to achieve a competitive edge. But strategy has progressed over the past 40 years. In the 1970s many firms put an effort into developing a comprehensive system of articulated plans which are embedded in all organizational activities at different levels. (Porter and Porter, 1980)five-force industry analysis approach falls into this context.

After the 1990s, the accelerated pace of change in business dynamics which largely impacted on competition made the strategy more focused on approaches able to address continuous change. There was a need for flexibility and high responsiveness to tackle the uncertain environment surrounding the firm. The assumption that top management is able to formulate effective strategies based on purely analytical approaches, has been questioned. Strategies started recognizing the body of stakeholders which includes both external and internal stakeholders, such as customers, suppliers, competitors, government agencies, employees and others. The notion of collective strategy, competency-based approach, the learning organization and common understanding all include stakeholders within the overall strategy development. The literature provides a variety of approaches to the development of the strategic planning paradigms which are partly competitive and partly supplementary. The decision of a specific paradigm and a strategic management technique is completely related to the “school of thought” one favours. (Mintzberg et al., 1998) and (Mintzberg and Lampel, 1999) describe

nine schools of thought on strategy formation (Table 2). (Volberda and Elfring, 2001) define a school of thought as the spectrum of concepts of particular researchers that has been well established in the field of strategic planning. Each school of thought can form a stand-alone paradigm. For this reason, a review of the nine schools of thought shows that they vary widely in the type of process, approach, base discipline, contribution and limitation.

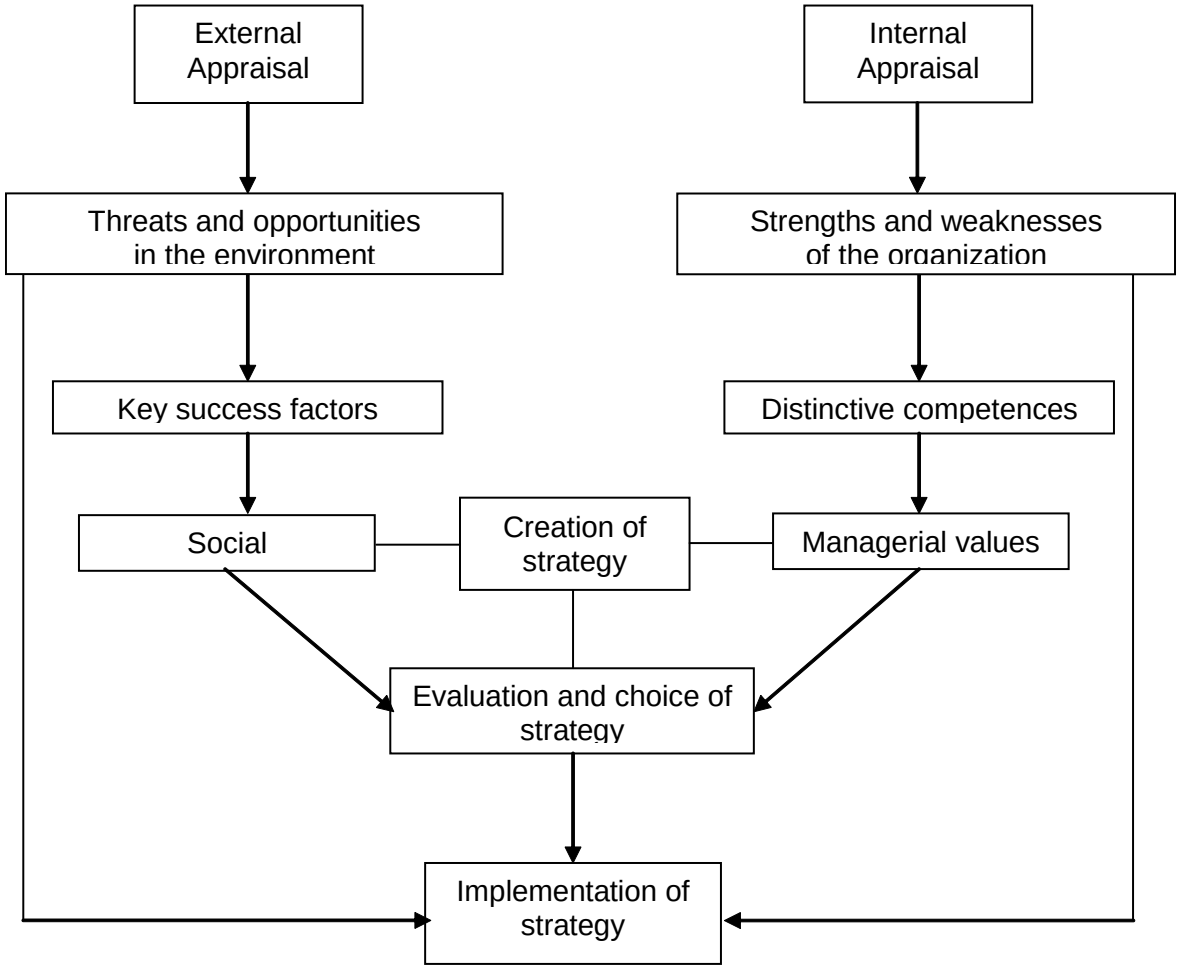
Table 2: Schools of thought in strategic management

	Prescriptive					**Descriptive**			
Schools	**Design**	**Planning**	**Positioning**	**Entrepreneurial**	**Cognitive**	**Learning**	**Political**	**Cultural**	**Environmental**
Key author(s)	(Andrews, 1976)	(Ansoff, 1965)	(Porter and Porter, 1980)	(Schumpeter, 1934)	(Simon, 1976)	(Lindblom, 1965) (Quinn, 1989)	(Allison, 1971)	(Normann, 1977)	(Hannan and Freeman, 1977)
Base discipline	None	Systems theory, cybernetics	Economics	None	Psychology	Psychology	Political science	Anthropology	Biology
Vocabulary	SWOT model, fit	Formalizing, programming, budgeting	Analyzing, generic strategy	Vision, leadership, innovation	Bounded rationality, map, mental model reframe	Incremental, emerging	Power, coalition dominant	Ideology, values	Reaction, selection, retention
Central actor	President/ director	Planners	Analysts	Leader	Brain	Everybody who learns	Everybody with power	Collectivity	Stakeholders
Environment	Opportunities and threats	Stable and controlled	Analyzable in economic variables	Manoeuvrable	Overwhelming for cognition	Demanding	Intractable, malleable	Incidental	Dominant, deterministic
Strategy	Explicit perspective	Explicit plan	Explicit generic positions	Implicit perspective	Mental perspective	Implicit patterns	Positions, plays	Collective perspective	Specific position

Source: (Mintzberg et al., 1998)

Commonly, strategic planning processes deliberately guide the course of the organization by focusing on adjusting the organization to its surroundings through a series of consecutive steps which identify what is known as SWOT i.e. internal strengths and weaknesses and external opportunities and threats (Pennings, 1985). Figure 5 represents a framework of the conventional strategic planning process described as the fundamental “design school” model by Mintzberg (1990).

Figure 5: Design school paradigm of strategic planning



Source: (Mintzberg, 1990)

Strategy scholars have conflicting views about the available assortment of schools of thought. Some consider this diversification as enrichment to the strategic planning research (Hrebiniak and Joyce, 1985) (Mahoney, 1993)(Schoemaker, 1993). Others criticize the absence of concurrence and integration in both methodology and theory employed (Camerer, 1985). To sum up on the evolution of strategy paradigm, the work of (Gluck and Kaufman, 1980) describes the evolution of strategic management as a process:

- Phase 1 - Basic financial planning: seeking better operational control by trying to meet budgets.
- Phase 2 - Forecast based planning: seeking more effective planning for growth by trying to predict the near future.
- Phase 3 - Externally oriented strategic planning: seeking increasing responsiveness to markets and competition by thinking strategically.
- Phase 4 - Strategic management: seeking a competitive advantage by managing all resources successfully with consideration to implementation, evaluation and control.

However, this four-phase approach to strategic management has undergone an evolution. A fifth phase is now identified with the development of the process from strategic management to strategic thinking (Stacey, 1993; Heracleous, 1998).

2.4 Strategic planning in the public sector

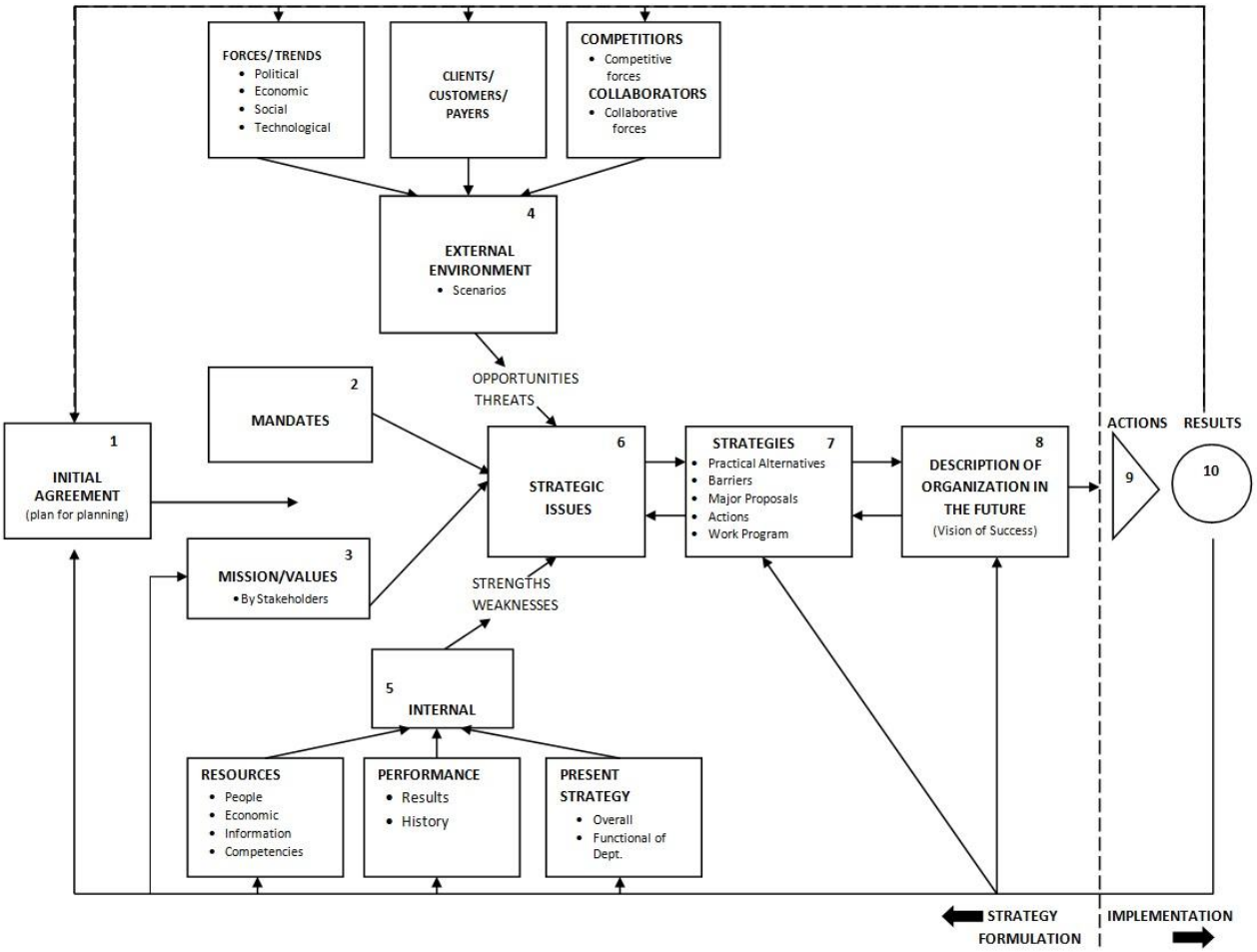
Recently, strategy as a field of study has moved into the public sector. Originally available in the field of military and business studies, strategy has shifted to a sector where public policy and management are combined in a sole arena of theory and practice.

Public organizations started applying the concepts of “corporate strategy” to government agencies and other stakeholders in the 1980s. The principle models of strategic planning in corporate firms are adopted but with specific

attention paid to the particular attributes of public organizations (Baile, 1998). (Eadie, 1989) and (Koteen, 1991) argue that successful approaches to strategic planning in public sector organizations should respect the unique complexion of public organizations and their surrounding environment. (Bryson and Roering, 1988) view strategy as a tool designed of policies, systematic actions and allocated resources to help an organization identify its purpose and direction. In the public sector strategic planning helps the organization to substitute its long-range-planning with an enhanced version of a strategy formulation process. (Bryson, 1995) argument depends on the fact that public organizations face more politicized environments than commercial firms and since strategic planning is more issue-oriented then it best fits political decision making which is all about addressing issues.

Figure 6 depicts the ten-step strategic planning process in public organizations adopted from (Bryson and Roering, 1988).

Figure 6: Bryson's model for strategic planning in public organisations



Source: (Bryson and Roering, 1988)

Bryson starts his planning framework with an “initial agreement” on the whole strategic planning process. The second step would be reviewing all organizational laws, regulations and rules which constitute “mandates.” After the first two steps it will be easy for the organization to identify its mission and shared values. The fourth step is the initiation of the situational analysis stage by analysing both the external and internal environment to be able at the end of step five to identify the opportunities, threats, weaknesses and strengths. Those so-called “SWOT” analysis, will make it practical for the organization to recognize important strategic issues which may influence the whole planning process. These strategic issues will be tackled in the seventh step by developing strategies to confront and control the challenges. Based on the

adopted strategic plan the organization's "vision of success" is determined. The two last steps of Bryson's model of strategic planning deal with putting together an action plan for implementation, and finally an appraisal and re-assessment of the whole plan, process and its results.

(Moore, 1995) argues that any strategy for a public sector organization to be viable must pass three tests which he calls "the strategic triangle". The tests are mainly related to: (1) organizational purpose and public values; (2) legitimacy to sustain the environmental commitment; and (3) and operational feasibility to attain the declared objectives.

Other researchers, such as (Lindblom, 1965)(Mintzberg, 1994; Isenberg, 1987; Miller, 1989), state that un-static forces in the circumstances surrounding the public organization call for an approach permitting flexibility, responsiveness and expediency. Public organization executives find themselves confronting situations related to public values and democratic principles since they operate in no sophisticated surroundings when examined in contrast to executives working in private corporations (Ring and Perry, 1985). The fact that most public organizations cater for government agencies and the general public, imposes huge implications for the subject and planning procedures. Hence, the process should be participative and transparent, and include all stakeholders. Furthermore, the objectives set should comply with legal mandates and address impartiality clearly.

Different authors, such as (Koteen, 1991; Bryson and Roering, 1988; Nutt and Backoff, 1992), have suggested models to deal with the negative influence of the political environment on the strategic planning process. Their propositions focused on "issue management" techniques that are paired with the public sector context. The difference between private and public sectors not only influences the strategy formulation process but also the execution and success of the organization. (Campbell and Garnett, 1989) identifies two areas where this public-private dissimilarity strongly exists. First, private enterprise strategies tend to be clearer in their objectives; this is because they are linked directly to

market position, offerings and profitability. On the other hand, strategies in the public sector are difficult to quantify, are vague and relate to a wider scope of community topics. Second, the implementation of strategy is strictly limited to internal participants inside the firm, while in public sector organizations political oversight and governance play a determinative role in the success or failure of implementing strategies.

(Nutt and Backoff, 1993) addressed organizations' "publicness" and its influence on strategic management. They amplified the areas that create a clear cut differentiation between private and public sector strategic management application. The result of their research is a list of recommendations and analytical factors associated with strategic planning outcomes in public sector organizations (Table 3).

Table 3: Factors highlighting public-private distinction in strategic management

Factors	Public organizations	Private organizations
ENVIRONMENTAL		
Market	-Defined by oversight bodies	-Defined by people's buying behaviour
	-Collaborating organizations	-Competing organizations
	-Financing by budget allocations	-Financing through fees and charges
	-Market data available through polls	-Market data available
	-Market trends difficult to detect	-Market trends easier to detect
Restrictions	-Mandates and obligations restrict autonomy and flexibility	-Autonomy and flexibility governed by law and internal agreement
Political Impact	-Safeguards needed to tackle political influence	-Political influence handled as exceptions without special arrangements
	-Political influence originates from authority networks and users	- Indirect political influence
TRANSACTIONAL		
Compelling factors	-People fund and consume the organization's services	-Optional consumption and payment based on utility
Spectrum of influence	-Broad set of issues having societal influence	-Narrow concerns with little societal influence
Inspection	-Development of ideas and processes is public	-Ideas and developmental activities can be privately held
Ownership	-Citizens often act as owners and impose expectations on performance	-Ownership through stockholders
ORGANIZATIONAL PROCESS		
Goals	-Goals are unstable, complex, conflicting, and difficult to specify	-Goals are clear and agreed upon
	-Equity oriented	-Efficiency oriented
Authority Limits	-Implementation controlled by stakeholders beyond the authority leader's control	-Implementation vested in authority figures who have the power to act
	-Agency management within a governmental umbrella	-Agency management largely independent of outside influences
	-Limitations posed by role of public action	-No limits
Performance anticipation	-Vague and in constant flux, changing with elections and political appointments	-Clear and stable for long periods of time
Incentives	-Job security, power, recognition, roles and tasks	-Financial, roles and tasks.

Source: (Baile, 1998; Nutt and Backoff, 1993)

Later criticism on the differences of public and private sector strategic management refuted some previously established ideas. (Bozeman and Kingsley, 1998) argued against the idea that private sector staff are more

courageous in taking risks when compared to public service employees. Moreover, (Rainey and Bozeman, 2000) proved, through their two-decade long study, that what is used to describe the goals of public organizations as more complex and vague is completely untrue. The principal benefit of comprehending the dissimilarities between public and private sectors is that it makes the shift of management practices easier from one sector to another (Esteve and Ysa, 2011).

2.5 Criticism on strategic planning

Criticism on strategic planning as a management tool escalated as it gained more recognition among researchers and practitioners. The criticism varied between those addressing the "process" by itself (Earle, 2009), and others pointing at the disoriented behaviour of some organizations which focus extensively on the strategic plan rather than on its implementation (Trainer, 2004). Other researchers such as (Sevier, 2003), encourage process utilisation but argue that the results of the plan should be more valued than the plan itself. (Sevier, 2003) specifically notes that "the goal is not the creation of a strategic plan. Rather, the goal is a sense of direction and institutional coordination created by an effective strategic planning process. In other words, the plan is a guide to action" (p. 254).

Additionally, the strategic planning process is seen by many critics as a complicated and redundant process which may not lead in many cases to fruitful results. (Mintzberg, 1994) emphasizes the influence of a continuous changing environment on the strategic management process and argues that setting goals and objectives, identifying strengths and weaknesses then formulating clear-cut strategies is an over-simplification of the real strategic management process. (Mintzberg, 1994) adds that strategies may develop in an unintentional manner. Here arises the need to distinguish between a deliberate strategic planning process and daily decision making. (Bryson, 2004) supports (Mintzberg, 1994) on the need to be flexible and diversified in using sources of inspiration for strategic planning, by stating that "too much attention to strategic

planning and reverence to strategic plans can blind organizations to unplanned and unexpected yet incredibly useful sources of information, insight and action“ (p. 16).

(Grant, 2003) studied the strategic planning systems set by multinational corporations when confronted by unstable environments. That study found that since the late 1970s a basic alteration has taken place in the function of strategic planning. The 1980s demonstrated the downfall of using medium-term forecasts as the basis for corporate plans, especially after the reliability of the market predictions declined dramatically. Consequently (Paterson, 2009) argued that as a consequence of this instability, the general tendency of planning strategically has changed. The shift has been made from a prediction-oriented endeavour to an active process comprising a futuristic vision and a two-way process within the hierarchy of an organization. Clearly, this shift from the earlier, confident, design-orientated to a more recent, process-orientated approach to strategy formulation has emerged in response to volatile environments.

In the same period that the style of planning changed, so did ideas about the legitimate timescale required for planning. Global environmental turbulence was undermining confidence in conventional long-range planning. (Allison and Kaye, 2005)(Allison and Kaye, 2005) suggested that the shift in emphasis from “long-range planning” over a wider time expanse to strategic planning that has a “shorter-time perspective” occurred because each short-term period assumes a different environment. In a stable environment, long-range planning predicted specific year-by-year, solid, high detailed objectives. In contrast, it is argued that an organization should not be passive to a dynamic surrounding. Therefore, strategic planning focuses on decision making which allows the organization to respond to alterations in the environment. While private sector firms may find short and medium term planning effective, public sector firms find long term views more essential.

The efficacy of strategic planning as a managerial instrument is challenged by many researchers who consider strategic planning simply as a fad that will disappear. This raises a question about the future of strategic planning. (Steiner, 1997) considers strategic planning to be resilient and believes that it will continue to develop and the gap in our knowledge about it will narrow. He anticipates an increased emphasis on strategic design and implementation without losing attention on operational planning. This is because environments will become more complex and sophisticated, urging organizations to adopt strategies that will allow them to be ready to adapt and tackle turbulent environments. Within the context of an increasingly dynamic, highly competitive and global business environment the debate continues on the effectiveness of principal theories for strategy development, i.e. the prescriptive and emergent approaches. Many organisations have been forced to become more flexible and adaptive to change. This supports the adoption of an emergent approach to strategy development which invokes a more intelligent capacity to respond to new opportunities. Nonetheless, such a strategy can preclude control over actions and may risk a lack of direction. In this case the use of a prescriptive approach to strategic planning would facilitate improved organizational learning and enhance strategic thinking. Thus, the prescriptive and emergent processes, rather than being mutually exclusive, can be complementary approaches that reinforce each other. Such a concept has been advocated in more recent theories such as the Logical Incrementalism approach proposed by (Quinn, 1989)

To conclude, (Earle, 2009) recommended both strategic planners and practitioners to diminish their desire to build processes, models and structures, because all of these will lead strategic planning to become more short-sighted.

2.6 Strategic planning and aviation policy development

The aforementioned definitions of the strategic management process are encompassed in (Phillips, 2006) proposed definition of *aviation management* as the study and practice of general business processes used to achieve targeted

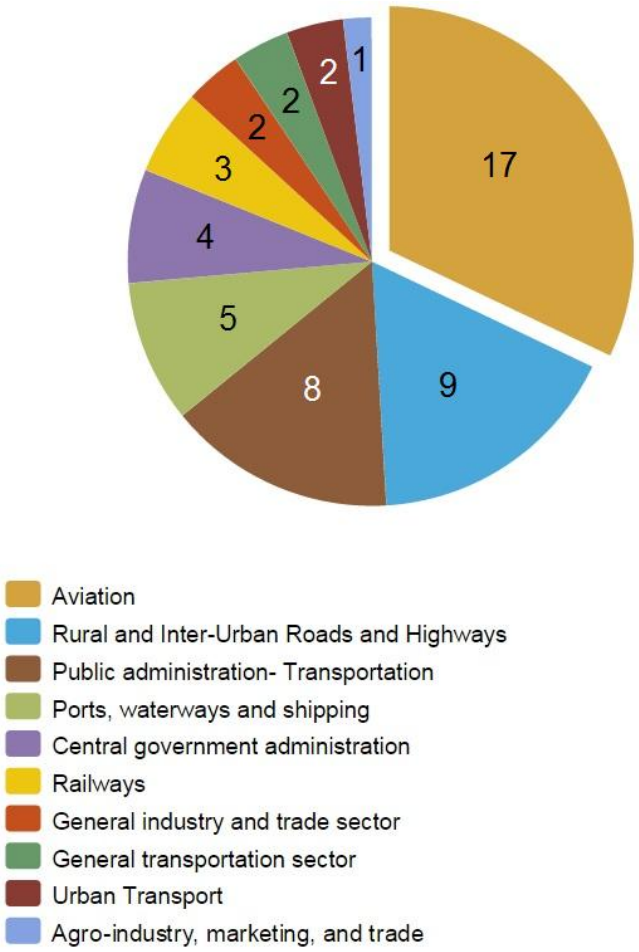
objectives in the aviation industry. This broad definition supports the essence of strategic planning which is based on achieving targeted objectives. Moreover, limitations on predicting the future present considerable challenges to policymakers. For most sectors including the aviation sector, predicting civil aviation system behaviour is difficult. Besides, the growth of the aviation industry and the increase in international competitiveness both require local government policy orientation to ensure the systematic, sustainable and orderly development of national civil aviation sectors. The major benefit of aviation policy strategic planning is that it integrates and creates a link between the government's vision for the aviation sector, the goals of the operators and the business models employed to achieve optimal results. Hence, it is imperative that a clearly defined, long-term civil aviation policy is formulated. Furthermore, it is important for the aviation policy to be based on national priorities.

In the developed world, aviation strategic planning is a state-level activity used to provide guidelines for all aviation stakeholders and direct collective efforts towards common national goals. In the "Australian National Aviation Policy White Paper" the Australian Government has brought together all aspects of aviation policy into a single, forward-looking document. The document which was published in 2009 was different from previous aviation policy documents. It was the first to recognize the need to move away from an *ad hoc* approach to policy and planning for the aviation industry to a more coherent, strategic approach (Australian Government, 2009). Additionally, the document on the "United Kingdom's Aviation Policy Framework" presented by the Secretary of State for Transport in 2013 came ten years after the previous Government's policy on aviation presented in the Air Transport White Paper. The updated aviation policy framework document sets out the UK Government's objectives and principles to guide plans and decisions made at local and regional levels. It incorporates planning elements and recognizes the need for industry collaboration, stakeholders' involvement and transparency to realize effective long-term planning for the aviation sector (UK Department of Transport, 2013).

However, in the majority of the LDCs the design, development and management of civil aviation strategic plans tend not follow an organized approach. This deficiency is not only the case in the aviation policy planning process in developing countries; this is almost the case across different state departments and the shortage in planning is associated with the low maturity and development levels of the institutional framework in the less developed world. However, problems are likely to occur when the advanced model of regulatory governance is put in use in dissimilar economic and institutional environments in LDCs, where human resource limitations and institutional capacity constraints imply that a “one size fits all” approach to regulatory governance is unlikely to result in the anticipated economic outcomes (IFC, 2008)(Yin-Fang Zhang, 2010)

Most of the less developed nations own and operate their own aviation infrastructure such as airports, communications and Air Traffic Control (ATC) systems. Governments’ financial resources are often found to be insufficient to sustain and upgrade their aviation-related infrastructures. As a result, developing nations tend to seek external funding opportunities whether from the private sector, development banks or international assistance programmes (World Bank, 2010). Currently the WB reports 17 active projects in the aviation sector being implemented in developing countries in the Middle East, Africa, South Asia and Latin America. Figure 7 depicts the number of active WB projects for different sectors in developing nations.

Figure 7: Number of active projects for different sectors including aviation in Africa, the Middle East, South Asia and Latin America.



Source: (World Bank, 2014d)

However, the absence of explicit national objectives and the weakness of local government departments to manage and oversee the external borrowed funds and align their goals with national priorities, have led in too many cases to ineffective aviation investment projects in countries that are dependent on foreign aid funding assistance. A recent example of an aviation investment downfall is the inability of the government of Botswana to repay interest on a loan to the Arab Bank for Economic Development in Africa (BADEA). The loan was intended for the upgrade of two of the country's airports: Sir Sereste Khama International Airport and Kasane Airport. Both airports are reported to be past their completion date of 2012. The funding agencies are more often

found to be controlling and directing the purpose and scope of these investments. The decisions are frequently found not to be in alignment with national aviation policies and growth strategies that the governments are seeking for the development of their national aviation sector (Mmegi, 2012).

The following sections describe the approaches to aviation policy development and systems planning in the developing world adopted by development banks, bilateral aid programs and the International Civil Aviation Organization (ICAO). The influence of these bodies in promoting civil aviation is also discussed.

2.6.1 The context of national aviation strategic planning

While developing an aviation strategic plan, a government may consider the needs of a country for air transport services and supporting infrastructure, alongside projected economic development and enhancing trade ties. The core of the civil aviation system is the national and international air transport service sector, while the other elements of civil aviation are all essentially support systems for air transport. Investment in upgrading the national air transport support systems, such as airports and ATC services, will be related to the future growth of the commercial air transport system or associated with the need for air access for reasons of social, strategic, regional development or national interest.

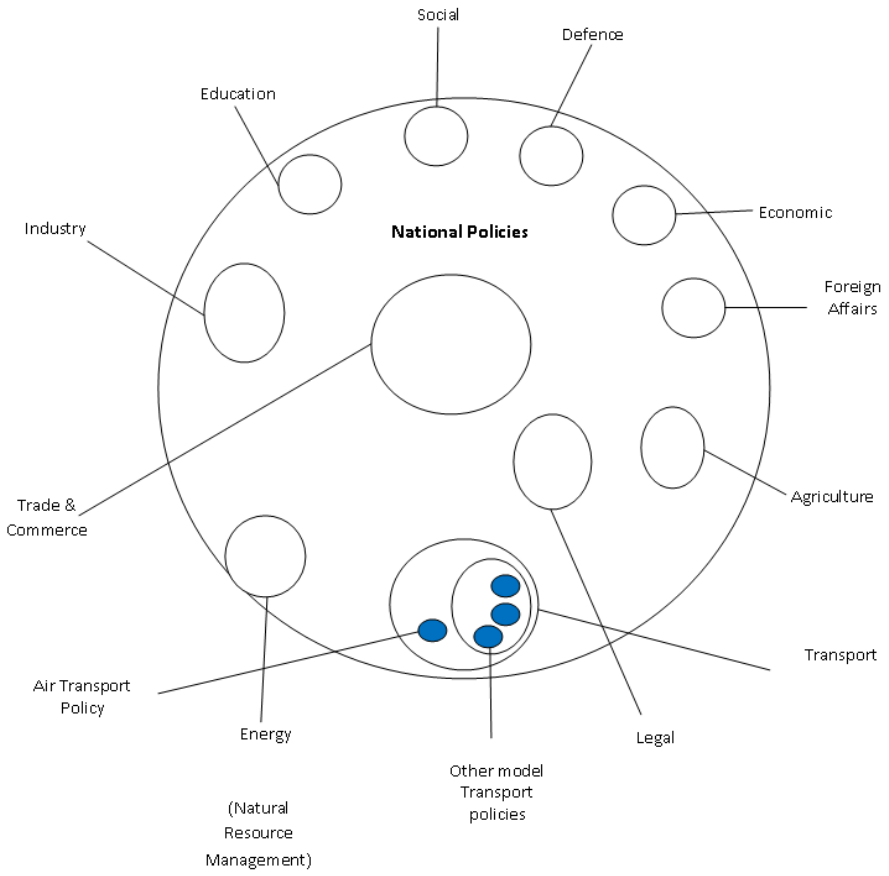
Developments in infrastructure tend to lag behind air transport growth requirements and airline initiatives. However, infrastructure developments can be used to boost the air transport industry. The main challenge for a government is to know how best to invest in the aviation infrastructure and when to do so. This will create an environment that both supports and encourages a strong air transport sector, and allows airlines and related industries a level of flexibility to make sound business decisions, as and when needed (ATAG, 2008).

At the national level, an aviation strategic plan is therefore a structure for the development of civil aviation over a defined time period,

including its administration, regulation, operation, infrastructure and financing. As such, it is the guiding policy, or master plan, for civil aviation in a nation, which accommodates the development of safe and efficient air transport services, and ensures that a suitable infrastructure is developed and maintained to support air transport.

An aviation strategic plan is not a stand-alone plan. To be effective as a guide to civil aviation investment, and to reflect national interests and priorities, aviation strategic planning will need to be part of a national policy planning process for transportation. The context in which the aviation strategic plan fits, or should fit, is as part of civil aviation policy, along with policies directed towards the development of other transport sectors, such as road, marine and rail. Transport policy, along with other national policies directed towards social development, education, industry, defence, foreign affairs, agriculture, commerce and trade, make up the broader national policy. Integrating policy planning on a national basis, is the most favourable way to ensure that aviation strategy can serve as an instrument to implement national policy in the civil aviation sector, and be coordinated with the priorities of government towards other social or industrial sectors that may need to be supported by civil aviation, such as tourism and trade (Figure 8).

Figure 8: Air transport policy integration with other national policies

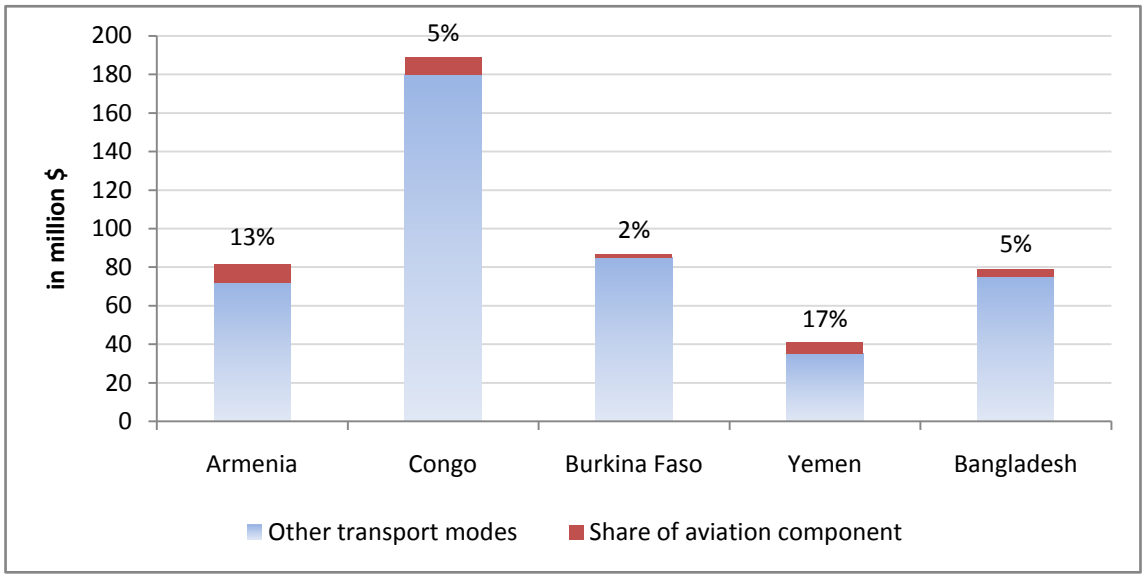


Source: (LEAPP, 2001)

Within the developing world, civil aviation is often not a part of the comprehensive national planning process and infrastructure upgrading; therefore it may suffer from unharmonized decisions, a lack of funding for expansion, and minimal maintenance. This is sometimes due to the fact that aviation development projects represent a small component of another development plan dedicated to roads and sea ports (Figure 9). Additionally, there is a lack of understanding of the social, political, or economic role, or potential, for air transport in countries where the average per capita income is low, and where air travel is enjoyed by only a small proportion of the population. In such circumstances, the influence of the CAAs, when seeking funding allocation through a parent ministry, is less than the power enjoyed by

departments of other transport modes such as roads and maritime (World Bank, 2009).

Figure 9: Share of aviation component within total cost of transport development projects in selected developing countries (2007 – 2018)



Source: (World Bank, 2014d)

However, where a need is seen by external funding agencies to direct investment into the civil aviation sector, be it to upgrade regulations, enhance safety, or encourage regional economic development or tourism, it is important that this investment takes place within a framework of national priorities (Kotaite, October, 2012). Moreover, the framework, which is the civil aviation master plan, will need to be tied in to national policy and macro-environment factors if it is to be a mechanism that ensures that investment continues to be utilised effectively. The same framework may also then be applied to direct and focus potential private sector investors towards projects that fit the stage of development of the country and are in the national interest (rather than merely in the interests of the investor), and to direct foreign assistance grants, loans and equipment procurement in the same way (Booz&Co., 2008).

2.6.2 Structure and approach to national aviation strategic planning in the developing world

There is no single approach to planning aviation strategy at a national level, although there are some common objectives. (RAND, 1997) summarises these objectives as follows:

1. A national aviation strategic plan needs to be driven by a defined air transport policy or a clear set of agreed on objectives of government for developing the air transport system.
2. The aviation strategic plan needs to be comprehensive, and must cover the principal civil aviation components of air transport, airspace, civil aviation administration and airports.
3. Each separate component of the aviation strategic plan must be developed to support air transport objectives.
4. The aviation strategic plan must identify and establish the role of non-government funding in implementing elements of the plan.

(Craig, 2001a) explains that in the past decade three basic approaches to aviation strategic planning have emerged from the major agencies funding civil aviation in the developing world:

- International and Regional Development Banks,
- National Development Aid Agencies (Bilateral Aid), and
- The International Civil Aviation Organization (ICAO).

The following sections will look into the approaches of these agencies that differ considerably in purpose, scope and effectiveness.

2.6.2.1 Development banks approach

The international and regional development banks[c] play a role in civil aviation development. Their involvement in supporting civil aviation is directed towards

[c] Among the most renowned banks that support aviation projects are the World Bank, Asian Development Bank, Caribbean Development Bank, Inter-American Development Bank, African

diversified and time-related projects which are not necessarily associated with one another. Funding through the international and regional development banks is known as multilateral funding, in that it is comprised of funds contributed by more than one member of the regional bank who come together to support a project.

In normal situations, the proposals for financial or technical assistance for a project are generated by national governments. However, there exist many cases where the form of assistance is suggested by banks' own project officers. This constitutes one of the more uncontrollable sources of inconsistency in the development banks' approach to supporting civil aviation, and one of the risk elements for compatibility with national macro-environment and planning objectives in the developing world. The International Bank for Reconstruction and Development (IBRD) Aviation Development Project for Afghanistan (P009305/1973) and World Bank Aviation Investment Project for Peru (P007971/1981) are examples of projects where the areas and scope of assistance were suggested by the Banks' officers.

To support civil aviation, the development banks finance the upgrading and development of airports, and the procurement and installation of equipment through loan schemes. The banks follow the approach of financing and delivering aviation strategic plans designed by qualified consulting firms, through the mechanism of Technical Assistance Projects (TAPs).

The approach by the development banks to aviation strategic planning through the TAPs has taken one of the following forms (Di Borgo, 2008):

- Advisory and Operational Technical Assistance consultant projects to develop national transport strategy (e.g. Asian Development Bank TAPs for the Philippines Transport Strategy Study 1996/7 and Indonesian Transport Strategy Study 1999/00),

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Development Bank, Islamic Development Bank, European Bank for Reconstruction & Development, European Investment Bank.

- Project Preparation Consultant Studies for project loan financing (e.g. European Investment Bank (EIB) study for financing Monrovia Airport rehabilitation project – 2014), or
- Technical Assistance for Institutional Strengthening (e.g. World Bank for the Pacific Aviation Investment project in Tonga – 2011).

Many of the projects undertaken by the development banks are not exclusively devoted to the air transport industry. This means the air sector development and needs are viewed in the light of national transportation priorities. Where aviation does not play a prominent role in national transportation, as is sometimes the case in some developing nations, this tends to diminish the importance placed on aviation in the national transport strategy plan. An example of a similar project is the Cape Verde transport sector reform project (P126516) funded by the WB at a total cost of 31 million USD. The project is aimed at supporting the African Cape Verde government to improve efficiency and management of its national road assets and lay the groundwork for transport sector, and state-owned enterprise reform. The proposed project consists of four components dedicated to develop rural and inter-urban roads, highways and sea ports. However, the share of the aviation sector from the total allocated funds is the least among other transport sectors with 11% of the total project cost. The aviation part of the project falls under the “Inter-island transport strategy” which is devised to improve the quality of inter-island sea and air transport services and the management of ports and airports (World Bank, 2014a)

What is also lacking in these project-related studies is an in-depth examination of the necessary national policy objectives in the air sector, such as: (a) air transport policy towards regulation/deregulation and international air service agreements; (b) consideration of the institutional framework within which the civil aviation system is administered, regulated, operated and maintained; and (c) the form of private sector involvement in the provision, management or ownership of infrastructure (Craig, 2001b).

Overall, the approach to aviation strategic planning presently adopted by the development banks is inadequate to ensure that national objectives are met. In the first place, there are no common terms of reference applied from one agency to another, and each agency's approach is tailored to suit the particular funding purpose.

The approach used by the banks towards civil aviation development (mainly through technical assistance studies) is not often tied to national legislation, nor can governments be obligated to implement those studies (European Commission, 2008).

2.6.2.2 Bilateral aid programmes approach

Some governments in the developing world use bilateral aid programmes to fund civil aviation infrastructure. Typical agencies providing such aid are the national aid agencies of highly developed countries such as the United Kingdom, United States, Canada, Australia, Japan and a few mainland EU countries. While several of these agencies target humanitarian projects in the developing world, from time to time aid is channelled mostly into civil aviation infrastructure, consulting services or equipment procurement. One drawback for the aid programmes directed towards civil aviation is that, with few exceptions, aid is tied to procurement in the donor nation. This means that consulting services, equipment procurement or contracting services are provided only from among suppliers in the country funding the project. In effect, the programmes are tied and restricted in terms of suppliers (USAID, 2010)[d].

The involvement of bilateral aid agencies in the aviation system development occurs where funding is directed towards upgrading a group of airports, or installing systems, such as for air navigation or ATC. Some airport upgrading projects, such as those funded by the Japan International Cooperation Agency

[d] In 2006, USAID in collaboration with US. Federal Aviation Administration (FAA) provided US$ 19 million to Afghanistan through an assistanship program to draft a civil aviation master plan and improve Kabul International Airport. The service and equipment providers were mostly American corporations, such as: Raytheon for the Radar System and TetraTech for airport master plan studies.

(JICA) in the Philippines and in Indonesia, are necessary. However the selection of the projects themselves remains under the control of the agencies. In most cases the priorities of the funding agency influence decisions for the allocation of funds to specific projects, and this approach may neither reflect national priorities for air transport development nor serve their specific needs for equipment.

In the case of equipment procurement and implementation, a serious problem can arise where, to comply with bilateral tied aid conditions, the procurement does not account for existing or committed technology, staffing or technical training, or the ability of the recipient nation to fund later purchases of spare parts with hard currency. An example of a serious mismatch of equipment procurement affected the ability of the Civil Aviation Department of Malawi to keep its navigation aids and radar serviceable, since a mix of Japanese (Toshiba) and French (Thompson CSF) equipment had been procured under different bilateral aid contracts, for different parts of the country (Craig, 1989). This resulted in different groups of technicians being trained on the different types of equipment, which meant that technical staff could not be deployed to all sites, or to all parts of the country, and therefore could not be used efficiently. An inability to obtain central bank approval for foreign currency also prevented spare parts from being purchased, which in turn meant that a terminal radar system remained unserviceable for several years. Problems caused in this way affect many developing countries, and can be a serious problem for civil aviation in many developing nations. Clearly the competitiveness of civil aviation in such nations is compromised.

As with the approach adopted by the development banks, there is no systematic methodology adopted by the national aid agencies in studying the needs of a national aviation system when providing funding that may have far-reaching long-term implications for its operation. In addition, there is no mechanism to ensure coordination occurs either between national agencies or from one aid package to the next (ICAO, 2010).

2.6.2.3 International Civil Aviation Organization (ICAO) approach

In 1989, the ICAO adopted its own approach to aviation systems planning for developing nations. This came about as a result of a growing awareness of a need to ensure that its own technical assistance program to civil aviation in the developing countries was well managed and implemented so that investment was properly directed. Concern had been expressed within UN circles that technical assistance requests received from the developing nations were sometimes inconsistent with the needs of those countries, often excessive and uncoordinated, and generally not well thought out in terms of achieving national objectives in civil aviation development. In an interview with the late Dr. Assad Kotaite (1924-2014)[e]—President of the ICAO Council, Kotaite explained that the aviation sector attracts many leaders in developing nations to implement development programmes and collect economic benefits. However, he said that the national needs should always come first when evaluating the scope and the cost of assistance projects delivered by ICAO to countries requesting aids (Kotaite, October, 2012).

This created the motivation in ICAO to design a mechanism to manage and direct different forms of aid and assistance to civil aviation. The ICAO model for aviation strategic planning was developed out of a technical assistance review of civil aviation undertaken in Malawi in 1989, and the concept was presented to members of the African Civil Aviation Conference. This put forward the concept of the National Civil Aviation Development Plan (NCADP), which formalised the process of aviation systems planning at the national level (Craig, 1989). Since then, the NCADP concept has been applied in several countries with considerable success (Mueller, 1993)[f].

[e] Dr. Assad KJotaite was elected President of the ICAO Council for eleven successive mandates – from 1976 until his retirement 30 years later in 2006. His tenure is the longest among senior executives in the history of the United Nations system.

[f] Possibly the greatest success in this respect has been the implementation of the ICAO NCADP concept in Uganda in 1993, which included re-structuring the Civil Aviation Department to form a commercially-based CAA outside the government structure.

The NCADP was proposed as a guide to the development of the civil aviation system, including air transport and all supporting infrastructure. While a number of reasons may be advanced to justify a national civil aviation development plan, the most compelling relates to the need to have a planned approach to upgrading and development of fixed facilities and infrastructure that comprise a nation's civil aviation system.

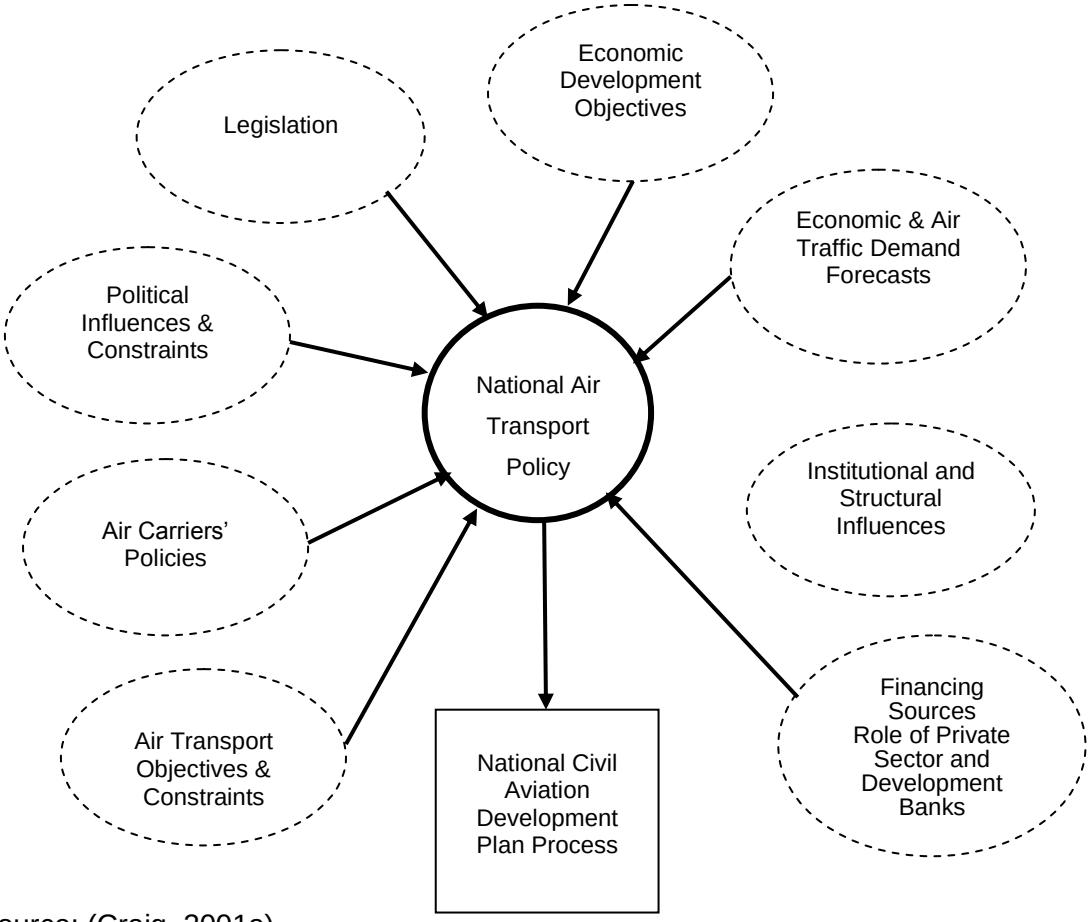
The same type of examples that justify a planned approach to civil aviation development can be provided for all areas of civil aviation administration, management and operations. The planned approach to sector development promoted by ICAO through this type of plan has benefits in that it ensures an economic use of resources and, particularly, capital funds. In a country where much upgrading is required, funds should flow to the projects considered to have the highest priority, or are considered to have the potential to generate additional commercial activity and so yield economic growth. The civil aviation sector and the nation's needs must therefore be set in the context of a planned implementation, based on priority of need, and justified by real prospects for air traffic growth. Thus, the investment plan for a nation's civil aviation sector is governed by the framework formed by the NCADP.

The ICAO approach to creating the NCADP involves developing inter-linked National Plans for the primary elements of civil aviation Air Transport, Airspace, Airports and Administration. These are separately documented, since each can also be used to guide an individual element of civil aviation. To be effective, the NCADP and its constituent parts need to be reviewed periodically and updated as necessary, so that it can reflect changing conditions for air traffic over time.

The process commences at the point of creating or confirming a National Air Transport Policy of the country to which the planning process is being applied. This is fundamental since the concept promotes the reason for a civil aviation infrastructure and its administration function as being to guide, facilitate and support air transport services and operations. All other elements are essentially provided in support of the air transport function. Policy formulation for future air

transport services is therefore the first stage in the preparation of the NCADP, and involves key inputs that define national objectives, policies and constraints that might affect National Air Transport Policy (Figure 10).

Figure 10: Key inputs determining the national air transport sector



Source: (Craig, 2001a)

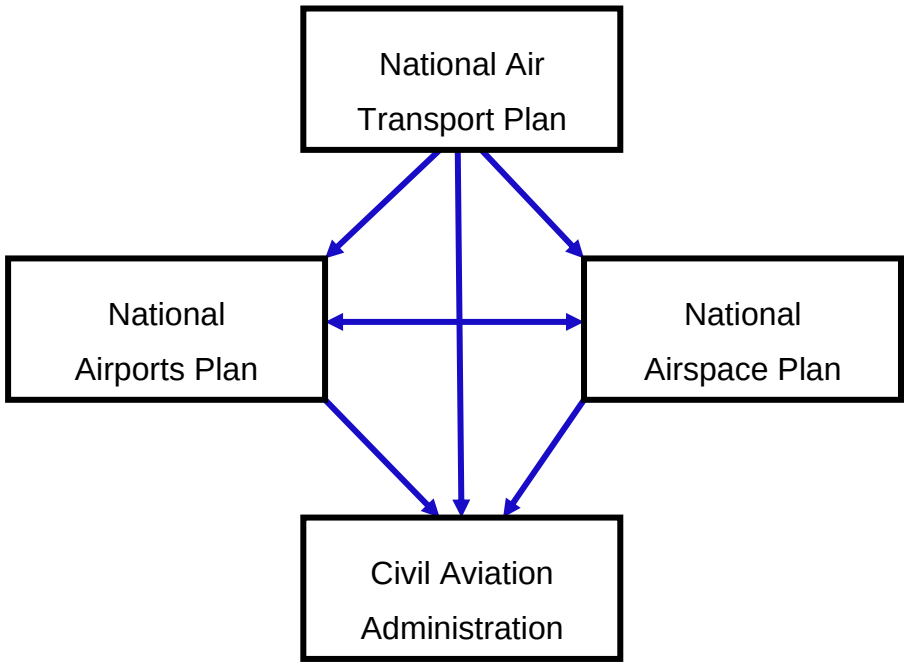
The principal policy inputs to Air Transport Policy are:

- Air transport objectives and constraints
- Air carrier policy - national carrier issues & objectives
- Economic development objectives
- Demand forecasts (economic and air traffic)
- Political influences and constraints
- Governing legislation and air service agreements

- Financing influences (role of development banks, government-to-government bilateral aid, the private sector)
- Institutional and structural influences (privatisation policy and ownership regulations)

From the above, the essential framework of a National Air Transport Policy can be established for the planning period of the NCADP since it provides the primary input to the process of the development plan.

Figure 11: ICAO's process on developing the National Civil Aviation Development Plan



Source: (ICAO, 1997)

The NCADP comprises the following major components, the structure of which is illustrated in (Figure 11):

- National Air Transport Plan: The National Air Transport Plan provides a long range strategy to develop air transport linkages both within a country and internationally. This plan is the basis for national civil aviation development, since all of the other elements of civil aviation are carried out in support, and for the benefit, of air transport. To a large degree the

plan concerns definition of national policy towards air transport to enable this industry to develop nationally, as well as internationally with suitable bilateral agreements. The plan is based on forecasts of air traffic growth following definition of policy regarding development of the nation's airlines and foreign airline access to specific cities. Passenger travel and air cargo growth and opportunity, as well as required air service links are covered within the National Air Transport Plan. Also addressed are the possible changes to international air services agreements, prospects for new markets that may be developed by the airlines, the impact of airline alliances and regional competition, and the economic contribution of aviation within the country.

- National Airports Plan: The National Airports Plan establishes the role, classification and operational capability of the nation's airports, in the context of future air transport requirements. It ensures that an overall accessibility to airports is achieved throughout the country, with the function of each airport carefully defined, and facilities provided at the airports in accordance with that function. Upgrading and expansion of existing airports, closure of superfluous airports and provision of new airports, are described in the plan, along with the priorities for airport projects and equipment procurement over time. An important feature of the National Airports Plan is the definition of policy towards airport investment (including private sector financing) and sources of investment, and towards commercialisation of airport activities, and enhancement of revenue opportunities.
- National Airspace Plan: The National Airspace Plan is a plan to structure the ATC and navigation aids system to serve the needs of air transport into the future. This would mean a rationalisation of the ATC and air navigation facilities to ensure that only those facilities actually required for air transport service are maintained in the future. All of this would be carried out in the context of the ICAO Regional Air Navigation Plan and the change-over to satellite based air navigation and communications

over the coming 10 to 15 years. Also to be defined in the plan is the procurement programme and training and development requirements for the manpower and technical resources necessary to operate and maintain the future ATC and air navigation systems. An important feature of the Airspace Plan is its total integration with the National Airports Plan and the future policy direction for the development of the air transport system.

- Civil Aviation Administrative Plan: The Civil Aviation Administration Plan defines the mechanism by which the components of the National Plan can be coordinated for maximum effectiveness and efficiency. It covers the legal framework for civil aviation operations in the country, the administrative organization, including a CAA, and establishes the roles and staffing of all of the functional areas of civil aviation administration and regulation, such as Air Traffic Services, Aerodromes, Telecommunications, Flight Operations and Licensing, Airworthiness, and Air Transport. Also covered by this component is the overall "business plan" for civil aviation, including the national policies towards revenues (rates and charges), capital and operating budgeting, and project financing. Policies are also included within the Civil Aviation Administrative Plan for restructuring, such as through the creation of commercially-independent Airport Authorities for larger airports, where appropriate, or for regional airport authorities where the coalescing of smaller airports into commercial units is appropriate. An important feature of the Civil Aviation Administrative Plan is the definition of policy towards the participation of the private sector, if any, in the financing, development and operation of infrastructure for the support of civil aviation.

To sum up, the approach developed by ICAO to aviation systems planning though comprehensive and unbiased, seems to face serious impediments to implementation. This is because of time constraints and the high complexity of

the context in which those plans should be executed. In developing countries the struggle among different forces such as authority, politics and business makes the application of ICAO's NCADP difficult to manage. Many developing nations in need of civil aviation planning and institutional enhancing are in "crisis situations" wherein they must address survival issues immediately; there simply is not sufficient time, or financial, physical and human resources to conduct structured strategic planning processes and paradigms (Kotaite, October, 2012).

Conclusion

The fundamental conversion of strategic planning application from the private to the public sector shows the progression of strategic planning towards becoming a management tool in government agencies. However, the reviewed literature in terms of the structure and approach of aviation planning shows that there exists no predefined framework for formulating civil aviation strategies, and countries use different approaches to draft their civil aviation master plan. Aviation policy planning in the less developed world is mostly steered by the interests of the donors whether development banks or bilateral aid programmes. Moreover, in many cases, aviation planning represents stand alone studies and attempts to find solutions to specific situations rather than a comprehensive aviation plan which fits well with the country's macro-environment and is put in properly coordinated with other national policies for achieving medium and long- term objectives.

3 CHAPTER THREE: A MACRO-ENVIRONMENT APPROACH TO CIVIL AVIATION STRATEGIC PLANNING

Introduction

Air transport is considered a cyclical industry sensitive to the macro-environment in which it operates. As aviation policymakers and regulators strategically plan for their future, the systematic and synergistic effects of common factors which comprise the operating environment of the industry's organizations need to be considered. Thus, during the process of aviation systems planning, governments should perceive the generic conditions which exist in the economy as a whole as equally important to those of air transport exclusive conditions. This chapter highlights the significant impact of national macro-environment factors on a country's air transport sector and assesses these elements within the context of civil aviation strategic planning.

3.1 Influence of national macro-environment variables on the air transport sector

The macro-environment consists of broad conditions that exist in the economy as a whole, rather than in a particular sector. The number of possible strategic variables in the general environment is enormous. Various authors, such as (Fifield and Gilligan, 2000) and (Henry, 2010)(Fifield and Gilligan, 2000; Fifield and Gilligan, 2000; Henry, 2010), have listed those variables in different ways, the most notable being the PEST framework of the macro-environment (PEST is the acronym for political/legal, economic, socio-cultural and technological variables). Generally, strategic planners consider these variables as part of the environmental scanning to better understand the threats and opportunities created by those factors and how strategic plans need to be adjusted so that firms or sectors can obtain and then retain competitive advantage. The macro-environment in which a firm or sector operates will influence its performance, and the amount of that influence will depend on how much of the sector’s businesses are dependent on the health of the overall economy.

Cyclical industries, such as the air transport industry, are heavily influenced by the macro-environment. Any change in the conditions of the fundamentals which drive or suppress growth, will result in alterations to air transport industry trends and will also affect aviation-related enterprises which are susceptible to the PEST factors that exist in a given country.

To identify the factors which define the macro-environment on a country level, different approaches used in measuring national competitiveness were considered. National competitiveness is defined as the ability of a country to use its natural, human and financial resources to achieve productivity and efficiency. The term “national competitiveness” is frequently conceptualized in terms of the economy’s overall performance in macroeconomics. In short, it is assumed that a higher degree of competitiveness leads to a higher productivity, and therefore to a higher standard of living (McFetridge, 1995). (Porter, 1998b) asserts that national competitiveness is equivalent to productivity. This reflects the close links which Porter believes exist between the microeconomic productivity of an industry and the macroeconomic performance of the national economy.

The emergence of national competitiveness as an important policy goal has encouraged the development of indicators by which policymakers and practitioners can measure, analyse and compare relative competitive performance. The growth of competitiveness indices reflects the growing emphasis placed on benchmarking national economic performance. The most common method of benchmarking—and the one receiving the greatest media attention—is the approach which ranks several nations in terms of national competitiveness in the form of a league table (Lall, 2001; WEF, 2012). These rankings are done by building a system of indicators which are merged into a single, composite score and/or rank.

The first competitiveness index was produced in 1979 by the WEF in collaboration with the Institute for Management Development (IMD). The index covered, at that time, 16 European countries only and was made up of four

competitiveness factors, whereas the index published in the latest report in 2014 covers 148 countries and is based on 12 different pillars (WEF, 2014)(WEF, 2013). Nowadays, the number of competitiveness reports has increased. However, the most common ones are the following: GCR of the WEF, the World Competitiveness Yearbook (WCY) of the IMD, the National Competitiveness Research Report (NCR), Report of the Institute for Industrial Policy Studies (IPS) and the International Location Ranking of the Bertelsmann Foundation.

This research adopts the factors of national competitiveness as identified by the WEF, in addition to other socio-political factors, such as the national macro-environment within which industries and sectors operate. The reason for selecting the WEF-GCR variables specifically, rather than variables available in other reports, is that the WEF is the first independent, non-profit organization to publish reports on competitiveness since 1979, with the GCR having been published since 1996. Rankings of national competitiveness receive much attention because they are also seen as proxies for future wealth and economic growth. This is important for policymakers and it makes the Global Competitiveness Index (GCI) compatible with the research's objective of identifying macro-environment factors with policy implications that impact on the air transport industry output. The methodology used by the WEF in measuring competitiveness has been developed almost continuously with the GCI which was first introduced in 2004. This index is based on 12 different pillars which build up the three sub-indices[g]. Depending on the stage of development according to Porter's approach (Porter, 1998b), these sub-indices are weighted differently when aggregated. The weights of the 12 pillars are fixed according to the results of a regression. Of the 113 variables included in the 2009 report, 73 are survey-based. This makes the WEF ranking on national competitiveness the one with the greatest share of survey data, based on more than 11,000 respondents.

[g]The three sub-indices as identified by WEF in the GCR are: basic requirements, efficiency enhancers and innovation factors (see Appendix A.5).

Studies on competitiveness indices are rare and little is known about their grounding in theory and methodology with notable exceptions such as those of (Lall, 2001) who focuses on the WEF report, and (Hanke and Walters, 1997) (Rouvinen, 2001) and (Vartia and Nikinmaa, 2004) who focus on the IMD and WEF reports. However, other researchers have provided a critical evaluation of the role and validity of indices used to measure national competitiveness. (Oral and Chabchoub, 1996; Berger and Bristow, 2009)(Oral and Chabchoub, 1996; Oral and Chabchoub, 1996; Berger and Bristow, 2009) explained that benchmarking indices are confronted with a number of key challenges, mainly the choice of variables and how to aggregate them into a composite index for ranking purposes. However, the use of ranking and composite indicators in policy making has been used widely by policymakers and has demonstrated their advantages despite the different critiques of the conceptual framework guiding this process (Saisana and Tarantola, 2002).

The 12 different pillars on which the GCI is based are factors of different dimensions (economic, technological, legal and social) and determine the level of productivity of a given country. These 12 pillars are*: (1) institutions (2) infrastructure (3) economic environment (4) health and primary education (5) higher education and training (6) goods market efficiency (7) labour market efficiency (8) financial market development (9) technological readiness (10) market size (11) business sophistication and (12) innovation*. Five factors have been added to these 12: *(13) economic stage of development (14) travel and tourism competitiveness (15) population count (16) country size and (17) level of political and security stability.* Hypothetically, these additional factors are looked upon as associated with the output of the air transport sector, as will be illustrated in the next section through the presented literature review which provides sufficient examples of this relationship. Among the objectives of this study is to identify numerically the indicators that are significant within their operating environment where this significance has policy implications and can be used to guide future developments in the aviation sector.

While all of the pillars described above will matter to a certain extent for all nations, it is clear that they will affect them differently because they are country-specific. The combined effect of these factors produces varied operating environments in different countries. In other words, and in order to succeed, civil aviation strategic planners should be able to identify the macro-level determinants of competitiveness of the country's air transport sector. While formulating competitive strategies, air transport policymakers and regulators have to scan external macro-environment factors surrounding the air transport sector. This will assist in developing an understanding of the total, albeit complex, economic, political, social and technological operating conditions.

The review of the literature provides examples of the impact of those macro-environment factors which stimulate air transport performance and hence enable this sector to contribute positively to the social and economic welfare of a nation. However, no previous studies have examined the aggregate impact of all these factors taken together. This study uses an exploratory research method that combines literature review and country level data analyses to identify national macro-environment variables which significantly impact on a country's air transport industry output.

3.1.1 Political / legal factors

A country's political and legal environment is analysed through information that describes the state of the public institutions, the structure of the legal framework, governmental policies and regulations, and the level of political and security stability; these factors are critical and have a direct influence on aviation activities. Institutions support the economic transformation and allow markets to function properly. The institutional environment forms the framework within which individuals, firms and governments interact to generate income and wealth in the economy. This framework has a strong bearing on competitiveness and growth. It plays a central role in the ways in which societies distribute the benefits and bear the costs of development strategies

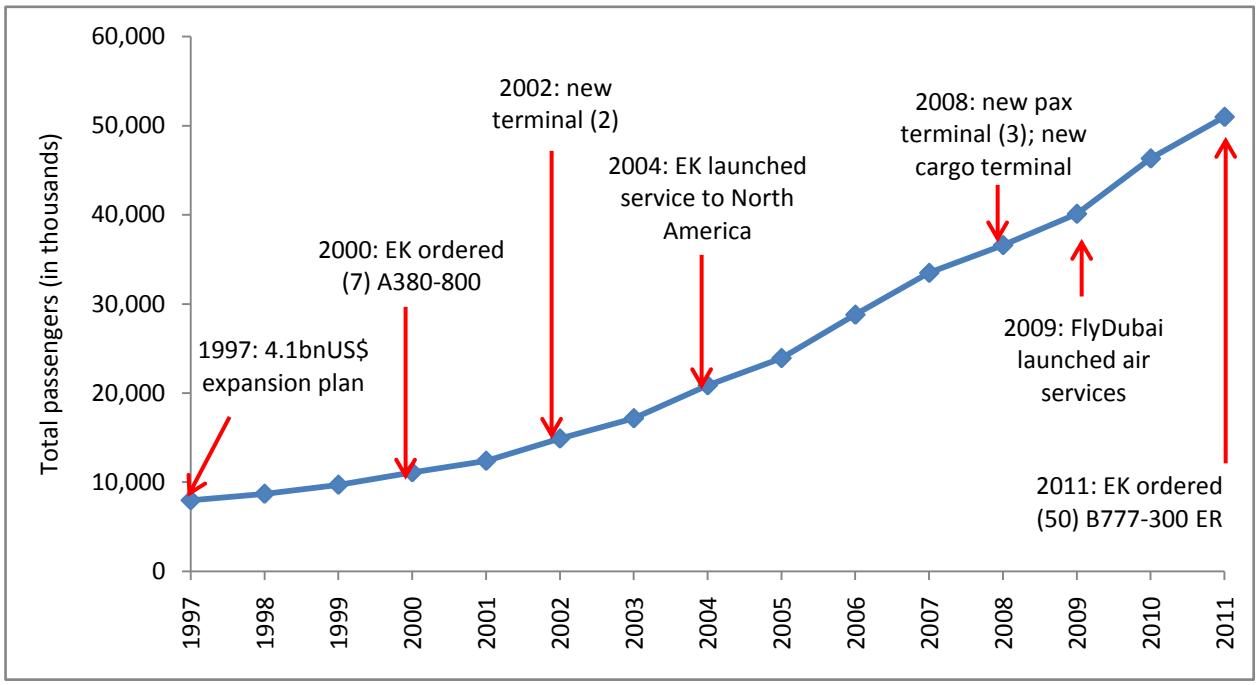
and policies, and it influences investment decisions and the organization of production (WEF, 2012).

The importance of institutions is not restricted to the legal framework. Government attitudes towards markets, freedoms and the efficiency of its operations are also very important; excessive bureaucracy, over-regulation, corruption, dishonesty in dealing with public contracts, lack of transparency and trustworthiness, or the political dependence of the judicial system all impose significant economic costs to businesses and slow down the process of economic development (De Soto, 2000).

A country's institutional framework plays an important role in enabling the flows of foreign capital and the development of new industries. The economies of the UAE, China and South Africa were effectively isolated from the global economy until institutional and political reforms were implemented over the last several decades. Similarly, air transportation demand increased in China after the government decided to pursue two-stage economic reforms and opened up policies in the early 1980s and 1990s. Domestic demand for air travel in China multiplied by 20 times, growing at an average of 18% a year compared with an average annual growth of 8.9% for all modes of transport (Boeing, 2010).

Another example is that of the government of Dubai that pursued changes in the institutional framework, and invested in the supporting physical infrastructure and development of its aviation infrastructure. The government of Dubai supported the expansion strategy of the national carrier in order to promote the growth of business and leisure passenger flows that enabled the flows of investment, highly-skilled labour, services, knowledge and tourism (Figure 12). Infrastructure and aircraft comprise only half the equation, however. The other necessary element for a rapidly expanding aviation sector is a capable and comprehensive institutional and regulatory model to oversee it (Majdalani et al., 2010).

Figure 12: Dubai Airport - Total passengers versus aviation development plans (1997-2011)



Source: (ICAODATA, 2012; Flight Global, 2013)

If air transport is about facilitating and supporting the movement of people and cargo in order to achieve maximum economic benefits, then political and security unrest certainly become the real challenges and threats to these goals. Political instabilities include unstable political systems where government authorities are continually changing, political conflicts between internal political parties, and the lack of strong leadership that creates financial and socio-political problems. Security risks include political unrest due to civil wars and conflicts, politically or religiously related assassinations, terrorism and other violent actions.

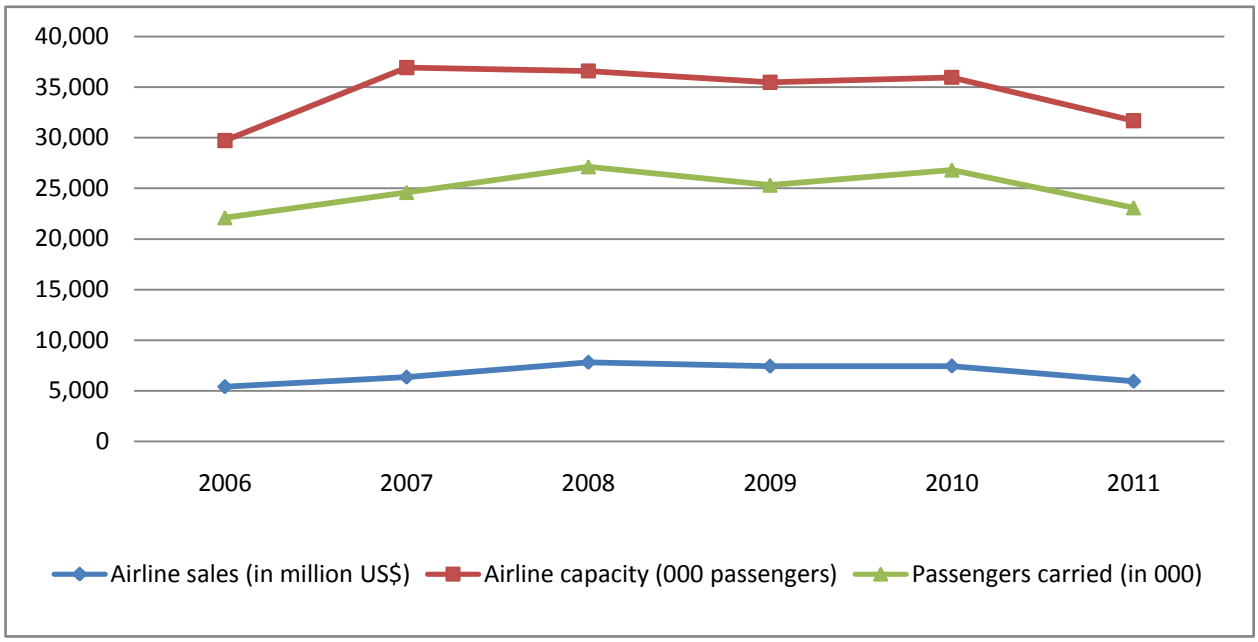
Inbound and outbound travel demand is also influenced by the external political and economic sanctions which restrict air transportation access to the economy. Past and recent histories are rich with examples of the negative impact of political sanctions and security instability on air transport growth. Libya, Syria and Sudan's air transportation system development was suppressed due to economic and political sanctions. These nations' flag carriers could not

modernize their fleet because of the US embargo on the export of high-technology equipment placed in the early 1980s (Vandyk, September 1,1991).The embargo prevented the airlines from buying new aircraft, and obtaining spares and other high-tech equipment (Endres, 2008)(Chochrane, 2009; Laessing and Abdelaziz, 2011).

Similarly, South Africa was isolated from the global economy during the decades of the apartheid era which ended in the early 1990s. Until then, geopolitical restrictions associated with apartheid played a substantial role in the international operations of airlines in South Africa (Pirie, 1992). These restrictions included revocation of landing and overflying rights of South African Airways, the nation's state-owned national airline, by other African governments in the 1960s.

Geopolitical crises, including wars affect the air transport sector. Perhaps, the most extreme example being the September 11th terrorist attack in 2001 in the US, which of course had a greater impact on the aviation industry than on the rest of the economy (Alderighi and Cento, 2004). The Middle East provides plenty of examples of the impact of conflicts on the air transport market. A recent example is the Arab Spring uprising in Egypt; the 25 January 2011 revolution had impacted on all facets of economic life in Egypt. Aviation, which contributes 8% of Egypt's GDP and supports approximately 1.3 million jobs, has been severely affected (Oxford Economics, 2011a). During the first quarter of 2011, the year-on-year drop of international arrivals was 46%; an estimated loss of 2 billion US$ (The Economist, 13 August 2011). Transportation remains the largest revenue generator within tourism in Egypt. Airlines still dominate transportation, especially as they are the main mode of transport for international travel and 91% of international visitors arrive to Egypt by Air (Oxford Economics, 2011a). Airlines operating to Egypt also suffered in 2011, with current revenues falling by 16% compared to a 10% drop for other modes of transport, and declined by 14% in the number of passengers carried (Figure 13).

Figure 13: Airlines operating to Egypt: sales, capacity and passengers carried (2006-2011)



Source: (EuroMonitor, 2012)

Egypt Air, the national carrier which accounts for 45% of all capacity to and from Egypt, saw its income drop by an estimated 80% during the first three months of 2011 compared to the same period in 2010. The airline incurred US$80 million in losses in February 2011 and another US$60 million in March. Additionally, the revolution halted the execution of aviation-related investment projects. The ten year US$2.4 billion programme for modernizing and expanding the airports was delayed in the light of the revolution and the related turbulent state of tourism in the country.

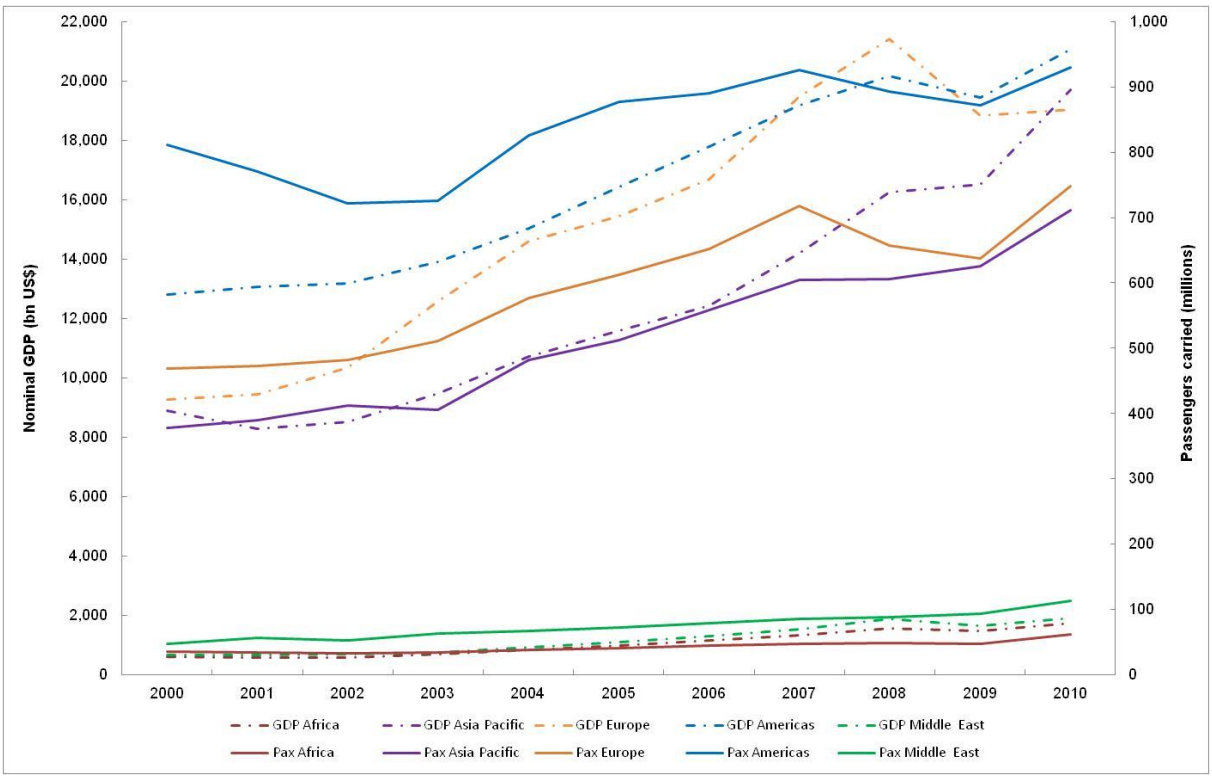
3.1.2 Economic factors

Air transportation services and economic development interact extensively. As a result, the availability of air transportation services effectively increases the scope and cycle time of economic activity. The region's economic activity in turn generates the need for passenger travel and freight, and drives the demand for air transportation services. Over the years and as a result of the increase in air

transportation usage, the number of studies describing the relationship between air transportation and economic activity also increased.

The ICAO indicates that a high correlation exists between the growth patterns of air traffic and economic trends in that the demand for air transport is primarily driven by economic development (ICAO, Sep 2007).Therefore passenger traffic increases with the support of the strong performance of the world economy, while the economic downturn and other events have a negative impact on that traffic (Figure 14).

Figure 14: Air passengers and GDP by world regions (2000-2010)



Source: (ICAODATA, 2010; IMF, 2012)

Air transport and traffic revenues are very cyclical, which means that they are closely related to the economic situation (Hätty and Hollmeier, 2003; Button, 2009; Franke and John, 2011). Literature discussing the impact of the latest economic crisis is rich with examples which conclude that during the recent crisis, the higher the economic growth (or the lower the economic decrease),

the more dynamic the air services at the national level are. Also, on a regional scale, Asian, South American and Middle Eastern economic growth results in the development of air services, while the reverse is true in Europe, North America, or Japan (Dobruszkes and Van Hamme, 2011).

Also, other studies (Cooper and Smith, 2005; InterVISTAS-ga2, 2006; Ishutkina and Hansman, 2009; ATAG, 2012) have analysed the interaction between air transportation and economic activity. Their analyses confirm that air transportation and the economy are mutually dependent, although the relationship between air transportation usage and economic activity is non-homogeneous and complex[h].

Additionally, there exist other factors that impact on a set of attributes characterising a given economy and affecting air transport sector output. These factors include the country's infrastructure and its competitiveness in travel and tourism. An extensive and efficient infrastructure is an essential driver of competitiveness; it is critical for determining the position of economic activity and reduces the effect of distance between regions, with the result of truly integrating the national market and connecting it to markets in other countries and regions. A study conducted by the Inter-American Development Bank in 2004 concluded that the greater the investment in airport infrastructure, the lower the costs of air transport. The study added that improvements in airport infrastructure (such as airport expansion projects, new terminal buildings and new runways), from 25 to 75% reduce air transport costs by 15%[i], thus leading to significant growth in the demand for air transport (UNWTO, 2013) (IADB, 2004).

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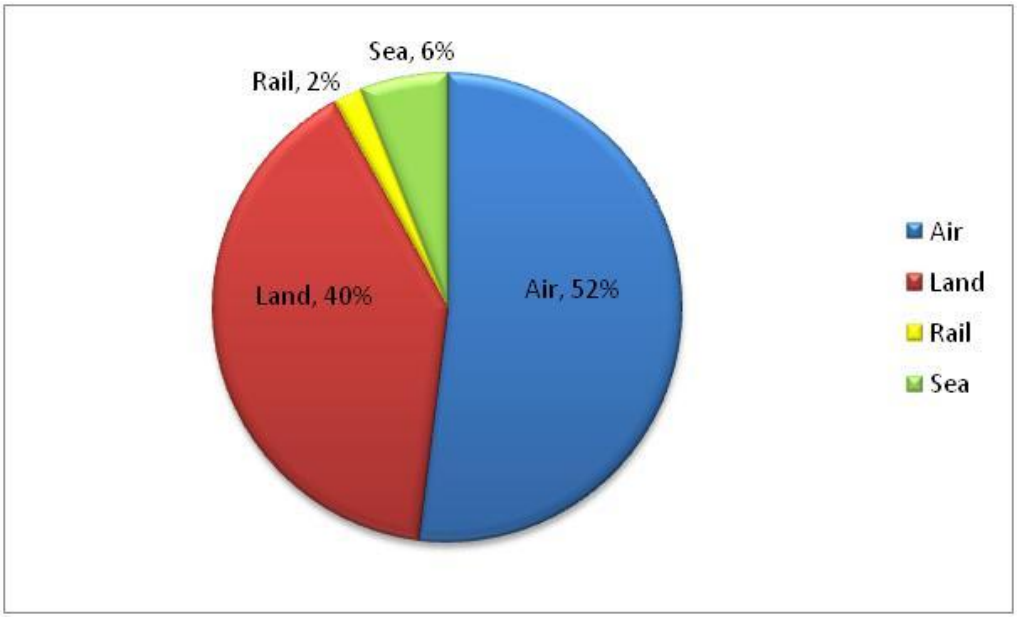
[h] Depending on the combination of unique economic and air transportation attributes, different mechanisms dominate the relationship between air transportation and economic activity thus making this relationship complex. Such attributes include but are not limited to: the nature of air transportation flows (international vs. domestic traffic), the dominant passenger jouney purpose, the level of economic dependency on tourism and the country's geographical location and proximity to resources.

[i] The IADB study quantifies the effects of infrastructure development on air transport costs through an empirical framework which uses a standard, reduced form approach. More information on the study is available at: http://www.iadb.org/en/publications/publication-detail,7101.html?id=6611

On the other hand, air transport infrastructure is pivotal for tourism development as slightly over half (52%) of all tourist travellers arrived at their destination by air in 2012 (Figure 15). However, many tourism-dependent, developing countries consider the enabling impact of tourism to be an integral part of their aviation sector developmental framework. As a result, they incentivize investment into air transportation and its supporting tourism infrastructure to increase the relative attractiveness of their economies to leisure travellers. Thus, a country with a competitive travel and tourism sector is prone to attract more visitors. Since the trend has been for air transport to grow at a faster pace than surface transport, so the share of air transport as a preferred mode of tourist transport is gradually increasing (UNWTO, 2013).

Figure 15: Inbound international tourism by mode of transport worldwide



Source: (UNWTO, 2013)

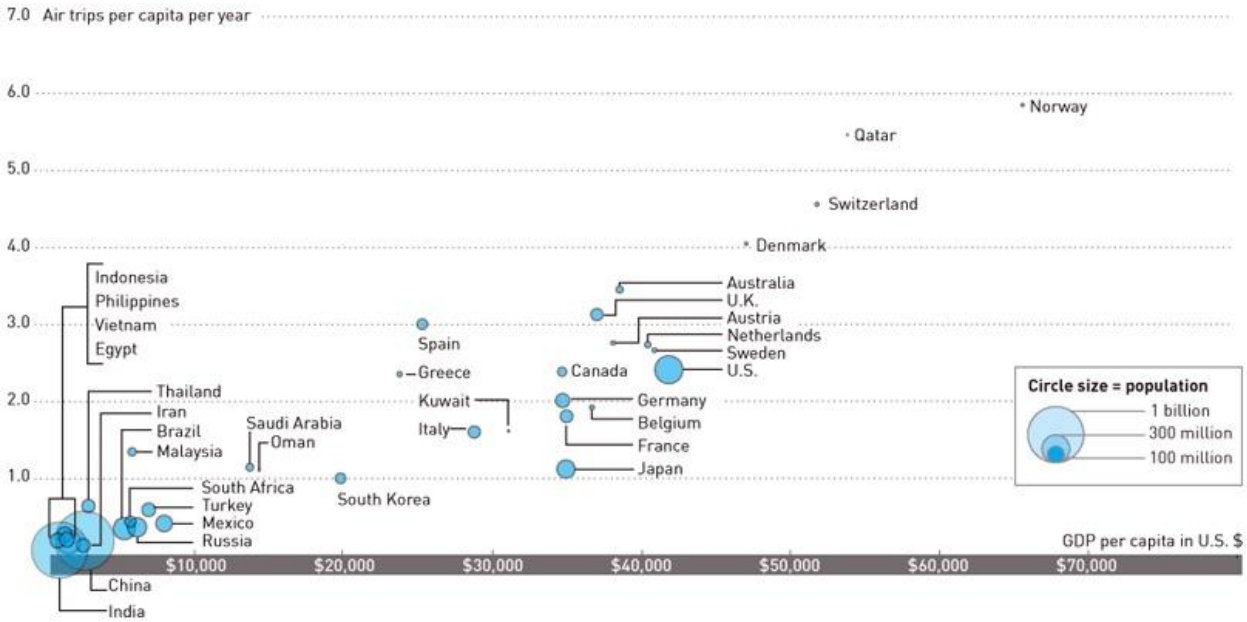
3.1.3 Socio-demographic factors

The socio-demographic factor is one among other factors of the macro-economic environment that influence the air travel supply and demand interactions. Socio-demographics include among others: population count, volume of national expatriate communities and country size.

Theoretically, population size has always been considered to be a main drive for domestic air travel. This is evident through population usage in different models as an explanatory variable to domestic air travel demand, besides others (InterVISTAS-ga2, 2006; Poore, 1993; Schafer and Victor, 2000). As for international travel, the gravity model—an empirical model describing the level of interaction between two geographic locations—assumes that the level of interaction between a pair of locations is proportional to their respective populations and inversely proportional to the distance between them (Rodrigue et al., 2013).

However, high population volumes are not necessarily associated with a growing passenger demand. Demand is more associated with economic conditions. People in emerging economies may not be able to afford to fly as much as those in developed countries. However, as their incomes rise, the number of flights per person increases as well. For instance, China—the world's most populous country with over 1.3 billion inhabitants—is the only developing country among the top ten world passenger traffic contributors (OAG Aviation, 2009). Despite the fact that China's passenger share is high, compared to others (airlines registered in China carried 7% of the world's total air passengers in 2005), individual Chinese people on average travel much less when compared to the other countries using the *per capita* basis (Figure 16). In 2011, despite a GDP growth of 9.2%, China's airport passenger traffic witnessed limited growth, reflecting a slowing domestic market and placing China four points lower than the world traffic/GDP growth ratio which reached 1.4 in 2011 (ACI, 2011; IMF, 2011).

Figure 16: Air trips per capita versus GDP per capita (2009)



Source: (OAG Aviation, 2009)(The World Bank, 2009)

In comparison and relative to population size, the importance of air travel was particularly high among the EU Member States (Table 4) for the popular holiday islands of Cyprus and Malta (8.6 and 8.4 passengers carried per inhabitant) in 2011, as well as for Iceland (7.7) and Norway (6.6). The lowest ratios were recorded for Slovakia, Romania, Poland, Slovenia, Lithuania, Hungary and Bulgaria, each reporting less than 1.0 air passengers carried per inhabitant in 2011 (EUROSTAT, 2012).

Table 4: Total passengers and passengers per inhabitant ratio for EU member states (2011)

	Total air passengers 2011 (in thousands)	Passengers per inhabitant ratio[j] (2011)
Cyprus	7,237	8.6
Malta	3,507	8.4
Iceland	2,463	7.7
Norway	32,402	6.6
Switzerland	41,440	5.3
Ireland	22,886	5.1
Denmark	25,805	4.6
Spain	165,153	3.6
Luxembourg	1,837	3.6
Netherlands	53,895	3.2
Sweden	29,732	3.2
United Kingdom	201,535	3.2
Austria	25,138	3.0
Finland	16,374	3.0
Greece	32,132	2.8
Portugal	27,578	2.6
Latvia	5,098	2.5
Belgium	25,099	2.3
Germany	175,316	2.1
France	122,887	1.9
Italy	116,315	1.9
Estonia	1,908	1.4
Czech Republic	12,242	1.2
Croatia	4,989	1.1
Bulgaria	6,652	0.9
Hungary	8,885	0.9
Lithuania	2,692	0.8
Slovenia	1,359	0.7
Poland	20,549	0.5
Romania	9,687	0.5
Slovakia	1,808	0.3

Source: (EUROSTAT, 2012)

[j] Passengers per inhabitant ratio is a result of dividing the total number of passengers carried by the population in a given country. This indicator shows that growing passenger demand is not always associated with population volumes, but in certain cases comes as a result of growing economic activity and geographic location, as in the case of islands such as Cyprus and Malta.

Another perspective of the impact of population on air travel demand is the significant role played by expatriate communities in the social and economic development of their home countries through various means of interaction, such as remittance flows, investments and regular visits. A large diaspora or foreign workforce creates an international demand for travel which is boosted by liberalisation and deregulation movements. Maintaining contacts and families at home motivates expatriates to invest in the local economy while bringing in knowledge, experience and networks from abroad. Returning expatriates provide a source of capital and skilled labour for their home economy while outbound migrant workers rely on access to air travel to maintain family ties in the local economy, resulting in flows of remittances for the home economy which affect the economy's local demand condition (Khanna, 2007; Kim, 2007). An example of the impact of emigrants' homeland relations on air travel demand is the case of Lebanon. The huge Lebanese expatriate communities, which are three times greater than the number of Lebanese residents, are said to cancel out the negative impact of security instability on air passenger growth through frequently visiting expats. Moreover, the emigrants' economic support to Lebanon through remittance inflows is observed to dampen the sensitivity of the relationship between number of passengers and GDP in times of war and peace (Itani et al., 2013).

3.1.4 Technological factors

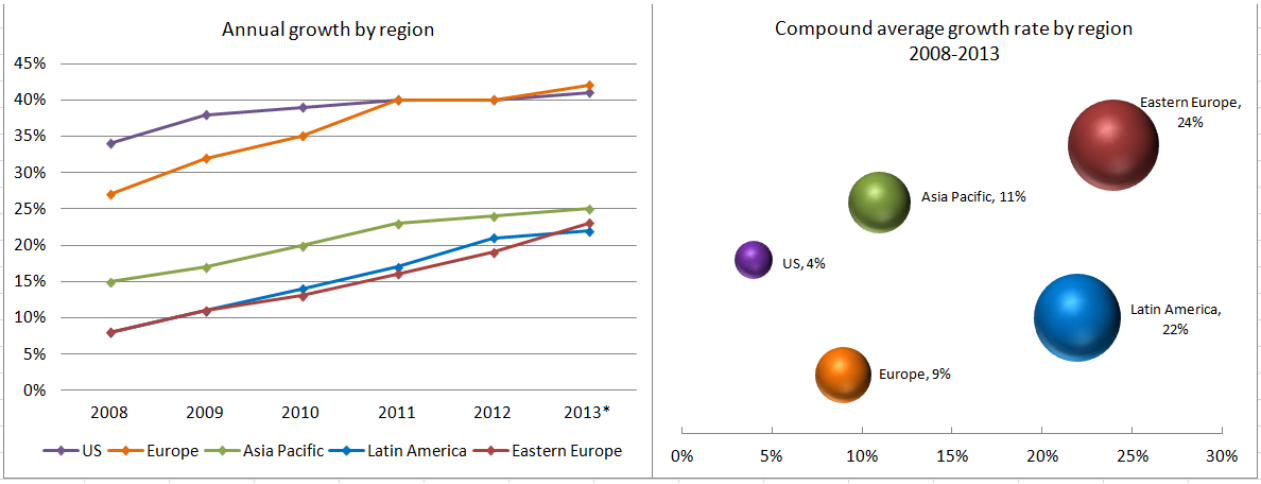
The technological readiness of a given economy measures the agility through which an economy adopts existing technologies to enhance the productivity of its industries. Additionally, technological readiness attracts foreign direct investments, serves as a catalyst in enabling businesses to prosper and opens new markets for innovative pioneers.

Developments in Information Technology (IT), according to (Hansman, 2005), have had a substantial impact on the aviation industry through improving the affordability, safety, capability and efficiency of the air transportation system and influencing the consumer demand for air travel. Clearly, the most significant IT

factor on the airline business has been the Internet which has shifted the playing field of the traditional airline industry. Online reservations and check-in systems, electronic boarding and the emerging mobile applications have increased the demand for air travel. The Internet has allowed airlines to control cost and effectively manage customer relationships (Gasson, 2003). Additionally, the use of Business Intelligence Systems (BISs) within integrated airport solutions has helped airports in improving customer service, creating cost savings and providing greater operational efficiency. Investments in the next generation BISs will have a big impact on airport processes—from check-in, to passenger flow and facilitation, retail, aircraft turnaround and boarding (Kaci, 2012)(SITA, 2013).

Information Technologies (ITs) will have a key role in emerging opportunities, particularly in the developing regions of the world where air transportation is a key to economic transformation. Wireless and satellite based ITs have the potential to allow regions with an immature air transportation infrastructure to rapidly reach parity with mature systems. Figure 17 depicts the growth in online travel penetration by region. Developing economies such as Eastern Europe and Latin America have witnessed over the last five years a double-digit CAGR of online leisure and business travel of 24% and 22% respectively, compared to a CAGR of 9% and 4% of established economies such as Europe and the US respectively.

Figure 17: Online leisure and business travel by world regions: growth of penetration of total travel market (2008-2013)



Source: (Kaci, 2012)

3.2 Identifying national macro-environment variables impacting on the output of the air transport sector

In order to identify the national macro-environment factors that have a significant impact on air transport output, it becomes important to analyse numerically the relationship of the different factors of the macro-environment with the air transport sector's output because of the implications that this relationship would have on air transport policy orientation.

For that purpose, a sample was built which included 52 countries in various stages of development from different geographical regions (Figure 18). In the early stages of the research, the sample consisted of 150 countries. Later on, during the data collection process, 98 countries were excluded due to the unavailability of consistent and credible indices respective to their macro-environment forces. Hence the final result is a sample of 52 countries. Twenty-one different indicators were collected for each country and distributed between two categories, specifically 17 input variables and four output variables (Table 5).

Figure 18: Countries included in the sample

*Americas: Brazil, Canada, Chile, Colombia, Ecuador, Mexico, Peru, USA. Europe: Austria, Belgium, Cyprus, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Spain, Sweden, Switzerland, UK. Africa: Egypt, Kenya, Nigeria, South Africa. Asia: China, Hong Kong, India, Japan, Jordan, Lebanon, Malaysia, Philippines, Russia, Singapore, Thailand, Turkey, UAE. Oceania: Australia, New Zealand.

Input variables include the 12 pillars of national competitiveness as identified by the WEF-GCR. Five input variables of a macro-environment nature are also included to test their relevance to air transport output. These five variables are: economic stage of development, travel and tourism competitiveness, population count, country surface area and the level of political and security stability. The literature reviewed in the previous section provided examples of cases where these five additional variables are found to have an impact on the output of the air transport sector. Including these variables as inputs in this sample will demonstrate analytically whether a statistical relationship exists between the mentioned variables and the air transport industry output.

As for the air transport industry output, the analysis is restricted to only four indicators due to the lack of reliable data on other outputs[k] and limitations concerning the countries included in the sample. The four output variables used in the analysis are: total passengers per country, total contribution of air transport to national GDP, total contribution of air transport to employment and air connectivity levels.

For the sake of consistency, the data reported on all the mentioned variables are for 2009 except for the Air Connectivity Index data that were published only once by the WB for the year 2007. Table 5 provides descriptive statistics of the variables included in the sample.

[k] Other outputs of air transport might include: cargo traffic, registered airlines' performance index, hub airports' performance index.

Table 5: Descriptive statistics of input and output variables included in the sample

Variables	Mean	Median	Std. Dev	Minimum	Maximum	Skewness	Kurtosis	Data Source
Inputs								
Institutions	4.58	4.51	0.97	2.97	6.15	0.09	(1.34)	(WEF, 2009a)
Infrastructure	4.61	4.59	1.23	2.29	6.59	(0.17)	(1.09)	(WEF, 2009a)
Macro-economic stability	4.84	4.75	0.67	3.43	5.95	(0.28)	(0.62)	(WEF, 2009a)
Health and Primary Education	5.68	5.89	0.71	2.96	6.46	(1.95)	4.49	(WEF, 2009a)
Higher Education and Training	4.70	4.65	0.71	3.03	5.97	(0.17)	(0.67)	(WEF, 2009a)
Goods Market Efficiency	4.65	4.69	0.53	3.32	5.77	(0.18)	(0.52)	(WEF, 2009a)
Labour Market Efficiency	4.62	4.67	0.62	3.26	5.95	0.18	(0.14)	(WEF, 2009a)
Financial Market Development	4.68	4.67	0.58	3.27	5.91	(0.15)	(0.28)	(WEF, 2009a)
Technological Readiness	4.58	4.62	1.00	2.90	6.15	(0.08)	(1.40)	(WEF, 2009a)
Market Size	4.68	4.61	0.97	2.41	6.93	(0.13)	0.18	(WEF, 2009a)
Business Sophistication	4.70	4.75	0.63	3.42	5.89	0.09	(0.82)	(WEF, 2009a)
Innovation	3.92	3.80	0.86	2.34	5.77	0.43	(0.71)	(WEF, 2009a)
Economic Stage of Development	4.10	5.00	1.24	1.00	5.00	(1.28)	0.73	(WEF, 2009a)
Travel and Tourism Competitiveness	4.65	4.82	0.58	3.02	5.68	(0.51)	(0.35)	(WEF, 2009b)
Population Count	90,049,124	19,277,850	242,841,973	317,398	1,338,299,511	4.56	20.89	(United Nations, 2012)
Country Size	1,575,131	307,001	3,441,009	316.00	17,098,242	2.92	8.66	(United Nations, 2013)
Political and Security Stability	1.77	1.65	0.45	1.20	2.75	0.65	(0.63)	(IEP, 2009)
Outputs								
Total Passengers	65,529,775	26,971,319	139,124,778	1,365,343	964,402,413	5.59	35.45	(ICAODATA, 2009)
Aviation Contribution to GDP	4.62	3.10	4.36	0.60	18.00	1.70	2.23	(Oxford Economics, 2010)
Aviation Contribution to Employment	4.64	3.15	4.37	0.50	19.70	1.85	3.17	(Oxford Economics, 2010)
Air Connectivity Index	6.48	5.80	3.94	1.08	22.78	1.57	4.35	(The World Bank, 2011)

To evaluate the significance of relationships among input and output indicators, a two-phased approach is implemented comprising two statistical techniques, namely: Structural Equation Modelling (SEM) and Boot Strapping (BS). Structural equation models are statistical procedures for testing measurement, and functional, predictive and causal hypotheses. Complementing multiple regression and ANOVA methods, among others, these multivariate statistical tools are essential if one is to understand many bodies of research and to conduct basic or applied research in the behavioural, managerial, health and social sciences (Bagozzi and Yi, 2012a). The structure of interrelationships is expressed in a series of relationships amongst dependent and independent variables. Unlike regression analysis, SEM tests multi-relationships simultaneously between the suggested independent and dependent variables (Hair et al., 2009) (Mooney and Duval, 1993). SEM is a conformity technique often used to measure the fitness of an assumed model of relationships to the provided data. In this study it is used to identify the significance of relationships among variables, irrespective of the fitness levels, since the focus of the research is identifying the significant variables, rather than looking at the magnitude of this significance.

Due to the relaxation of the fitness requirements and the small sample size (52 countries) a Bootstrapping technique (BS) is employed where repeated samples are drawn (1,000 iterations) of the original sample. BS estimates SEM parameters for the new sample and then determines the values for the parameter estimates (Mooney and Duval, 1993). Specifically, BS is used to estimate the significance from repeated sampling (1,000 iterations) of the original sample (52 countries) to ensure that it is a representative sample of the population of countries as a whole.

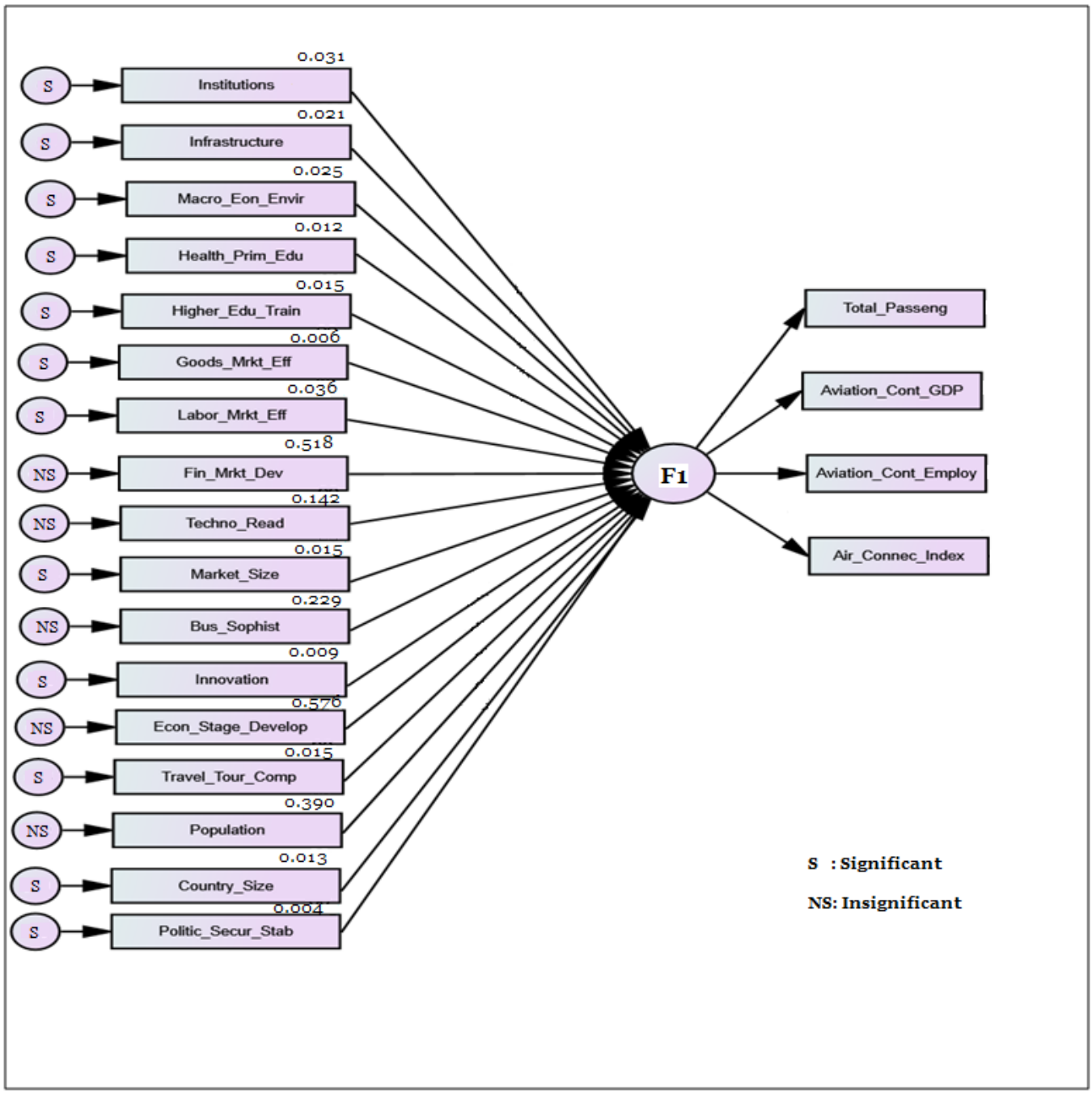
A graphical representation of the SEM path analysis[I] showing the direction and strength of the relationships between the set of 17 input (independent) variables and the four output (dependent) variables is provided in Figure 19. The node F1

[I] AMOS version 16 is used to obtain the SEM results.

stands for the total unobserved output[m] of a given country's air transport sector which is measured only by the four output variables. The values next to each input in Figure 19 represent the average significance level (average p-value) of the four output variables in relation to each input variable. More detailed reporting is shown in Table 6 where four significance values are available next to each input in addition to the average p-value in the final column.

[m] The unobserved output is also referred to as latent output. This comprises the air transport output factors which are not measured in this model because of the unavailability of data corresponding to all countries included in the sample. These factors are cargo traffic, level of performance of registered carriers and the level of efficiency of hub airports.

Figure 19: SEM path analysis showing the direction and strength of the relationships among the input and output variables



Source: Author; Amos V16

Results are reported at 95% confidence level. Variables with an average p-value <0.05 are selected as factors with relatively higher significance in relation

to air transport industry output when compared to other variables[n]. The results of the combined approach of the SEM plus the BS technique showed that out of the 17 input (independent) variables, 12 are found to be significant in relation to the air transport sector's output (dependent) variables which are included in this analysis. Political and security stability is said to be the factor with the highest significance value at 0.004, followed by Goods market efficiency at 0.006; whereas, the least significant factor is the Economic stage of development at 0.567. Additionally, it is obvious from the results that the 12 significant inputs are related to the four outputs differently; however, five inputs (political and security stability, goods market efficiency, innovation, market size, and institutions) share the same impact of <0.001 on two common variables (aviation contribution to GDP and aviation contribution to employment). Moreover, the country surface area, infrastructure, and travel and tourism competitiveness, are said to be the most significant inputs in relation to air connectivity levels. This is evident in the case of the USA which ranks first in the ACI on the one hand and ranks among the top ten countries in terms of infrastructure (ranked 7) and travel and tourism competitiveness (ranked 8) on the other.

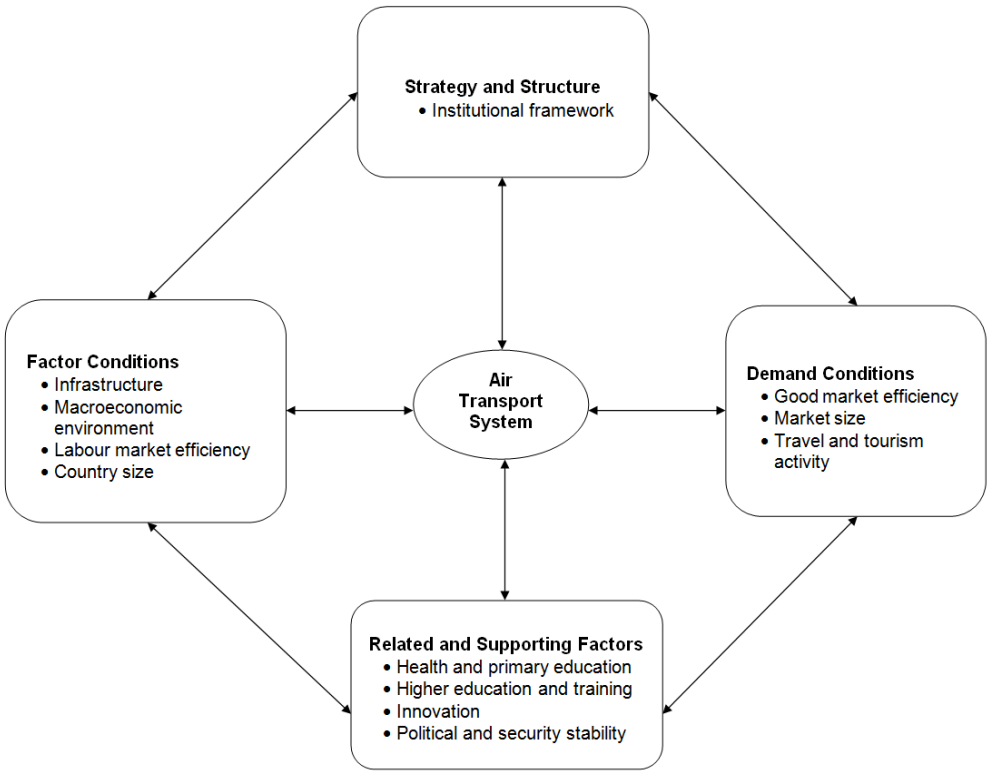
[n] Only the significance levels are provided not the coefficients. The objective of the research is to identify variables with significant relationships to air transport output rather than investigating the magnitude of this significance.

Table 6: Significance levels (p-value) of input and output variables in relation to each output variable

	Total passengers	Aviation contribution to GDP	Aviation contribution to employment	Air connectivity levels	Average
Political and security stability	0.004	<0.001	<0.001	0.003	0.004
Goods market efficiency	0.009	<0.001	<0.001	0.002	0.006
Innovation	0.003	<0.001	<0.001	0.015	0.009
Health and primary education	0.007	0.022	0.001	0.018	0.012
Surface area	0.017	0.010	0.012	<0.001	0.013
Higher education and training	0.029	0.009	0.017	0.005	0.015
Market size	0.008	<0.001	<0.001	0.022	0.015
Travel and tourism competitiveness	0.026	0.004	<0.001	<0.001	0.015
Infrastructure	0.034	<0.001	0.007	<0.001	0.021
Macro-economic stability	<0.001	0.007	0.029	0.038	0.025
Institutions	0.036	<0.001	<0.001	0.025	0.031
Labour market efficiency	0.012	0.049	<0.001	0.046	0.036
Technological readiness	<0.001	0.072	0.095	0.259	0.142
Business sophistication	0.007	0.379	0.466	0.062	0.229
Population count	0.001	0.538	0.591	0.428	0.390
Financial market development	0.563	0.296	0.818	0.395	0.518
Economic stage of development	0.032	0.973	0.747	0.516	0.567

The five variables with a lesser significance are: business sophistication, financial market development, economic stage of development, technological readiness and population count. It is worth mentioning that four out of the five variables (business sophistication, economic stage of development, technological readiness and population count) displayed significance with one common output, which is passenger numbers, as shown in Table 6.

Figure 20: Operating environment drivers determining the competitiveness of the air transport system on a national level



Source: Author; (Porter, 2004)

The reported results applied within the context of Porter's framework for national advantage[o] led to the development of a diagram which defines the operating environment drivers determining the competitiveness of the air transport system

[o] To explain why a nation succeeds in particular industries but not in others, Porter developed an analytical framework which he calls "The diamond of national advantage". This framework incorporates four attributes of the home environment: (1) factor conditions (2) demand conditions (3) related and supporting industries, and (4) strategy, structure and rivalry.

on a national level (Figure 20). Each point on the diamond—and the diamond as a whole—is a dynamic system in which all elements interact and reinforce each other, thus creating a competitive air transport industry deriving its strength from the nation's overall competitiveness. This demonstrates that an enabling environment identifies the capacity of a country to benefit from the use of its macro-drivers to support the air transport system output. Additionally, the maturity of the macro-environment and the leveraging of the identified factors remain preconditions for obtaining positive results.

This encourages governments to create a suitable context which will back the air transport industry's growth potential. The suggested diagram (Figure 20) serves as an assessment tool for policymakers to identify strengths on which to build and weaknesses that need to be addressed within national policies. In the coming chapter, how this diagram serves as a tool for governments to benchmark the performance of its national drivers of competitiveness against well performing countries will be investigated, in order to determine the degree of the environmental conditions' readiness to assist the air transport sector to compete both on national and international levels.

Conclusion

The concept of economic competitiveness affirms that the national environment in which industries operate can enhance or hinder their ability to compete nationally and internationally. It is important to analyse this macro-environment when industry planners are drawing strategies for the future. The hypothesis of the influence of national macro-environment factors on the air transport sector performance is tested through putting a set of 21 variables under examination. Seventeen input macro-environment (independent) variables are statistically tested against four output (dependent) variables representing the air transport sector output. The analysis was carried out on a sample of 52 countries.

The results of the SEM show that there exists a dependency between the stated macro-environment forces and air transport output. However, at a confidence level of 95%, only 12 input variables showed high significance (average p-value

< 0.05). The identified significant drivers create an enabling environment that determines the capacity of an economy and society to benefit from the air transport system's productivity. The success of a country in leveraging the air transport sector and in achieving the desired economic and social benefits will depend on its overall environment, including political and security stability, goods market efficiency, market size and its conditions, the regulatory framework, innovation-prone conditions, appropriate infrastructure, labour market efficiency, maturity of the health and education systems and its competitiveness in the travel and tourism sector.

The identified operating environment conditions provide a reference for policy orientation and for facilitating the identification of areas where policy intervention, through encouraging investments, including public-private partnerships, industry deregulation steps, or other liberal approaches to market access, could boost air transport sector performance. This is important because the development and sustainability of the air transport system depends on the capacity of a country to provide: an institutional framework with reliable and efficient rules and regulations; favourable business conditions to attract investments and trigger the birth and growth of new enterprises; an innovation-prone environment, capable of developing and absorbing new knowledge; a proper infrastructure capable of matching the increasing demand for air travel; and an appropriate air transport government policy.

4 CHAPTER FOUR: REALIZING BEST-IN-CLASS AVIATION STRATEGIES

Introduction

Based on the importance of the operating environment in creating an efficient aviation output, it becomes necessary to identify the countries which are using their operating medium in the best way to perform efficiently. This chapter aims to identify best-in-class aviation policy scenarios. It uses a two stage approach: Data Envelopment Analysis (DEA) and truncated regression on the sample of 52 countries used previously and determines those that are using their operating environment in a more efficient manner. Then the analysis captures the impact of aviation policy elements on levels of aviation sector efficiency. The results are used to answer the following question: What are the best-in-class aviation strategy scenarios that most fit a specific national macro-environment context? The objective is to identify the better performing countries and establish a relation between their performance and the aviation strategies they adopt.

4.1 Components of civil aviation strategic plan

As discussed in Chapter two, there is no standardized approach to civil aviation planning on a national level but there are more likely to be some common defined objectives and principle inputs which guide air transport policy, which is a primary step in the preparation of the civil aviation plan. Since the components of the civil aviation strategic plan are being discussed, it therefore becomes necessary to identify and describe the inputs that define the national air transport plan.

The national air transport plan provides a long range strategy to develop air transport linkages both within a country and internationally. This plan is the basis for national civil aviation development, since all of the other elements of civil aviation are carried out in support, and for the benefit, of air transport. To a large degree the plan concerns the definition of national policy towards air

transport to enable this industry to develop nationally, as well as internationally. This generally includes principle policy inputs addressing the following three areas: (a) governance through institutional and structural definitions of the legal framework for civil aviation administration; (b) liberalisation of air services through policies determining the government approach towards market access, international air service agreements and prospects for new markets; and (c) privatisation policies defining the government attitude towards Private Sector Participation (PSP) in the investment, management or ownership of aviation infrastructure—mainly airports and airlines. In terms of privatisation policies, this research focuses on discussing the government policy towards airports' privatisation and the form of PSP in the management or ownership of hub airports.

4.1.1 Institutional framework of civil aviation administration

The institutional framework of the civil aviation administration defines the mechanism by which the components of the national aviation plan can be coordinated for maximum effectiveness and efficiency. It covers the legal framework for civil aviation operations in the country, the administrative organization, including a Civil Aviation Authority (CAA), and establishes the roles and staffing of all of the functional areas of civil aviation administration and regulation, such as Air Traffic Services, Aerodromes, Telecommunications, Flight Operations & Licensing, Airworthiness, and Air Transport. Also covered by this component are policies for restructuring, such as through the establishment of an autonomous CAA to regulate the industry's aspects of safety, security and environment, in addition to planning for the management of airspace. Restructuring in most cases also leads to the creation of commercially-independent airport authorities for larger airports, where appropriate, or for regional airport authorities where the combination of smaller airports into commercial units is appropriate. The institutional framework plays an important role in the national aviation sector growth and development as this framework has a direct impact on the industry's output and performance. In this regard, the ICAO calls on governments and departments responsible for civil

aviation to have an appropriate institutional framework of the civil aviation system, i.e. the establishment of a civil aviation authority and/or other relevant authorities or government agencies, headed by a Chief Executive Officer, supported by the appropriate and adequate technical and non-technical staff and provided with adequate financial resources (ICAO, 2006a).

4.1.2 Liberalisation of air services

International air transport operates within the framework of the 1944 Chicago Convention on international air transportation, under which airlines' commercial rights on international routes are governed by a complex web of bilateral air service agreements (ASAs) between each country-pair. These ASAs regulate a wide range of conditions related to the provision of international air services. The World Trade Organization (WTO) Secretariat (WTO, 2006) identified seven features of ASAs as relevant indicators of openness for scheduled air passenger services: (1) Grant of rights (air freedoms allowing airlines to provide services over designated markets)[p]; (2) Capacity clause (regulation on volume of traffic, frequency of service, and/or aircraft types); (3) Tariff approval (whether fares need to be approved before applied); (4) Withholding (which defines the conditions for a foreign carrier to operate, such as ownership and effective citizen control requirements); (5) Designation (which governs the number of airlines allowed to serve the market between two countries and on specific routes); (6) Statistics (which require the exchange of operational statistics between countries or their airlines); and (7) Cooperative arrangements (which regulate the cooperative marketing agreements between airlines).

The emergence of the policies of deregulation and liberalisation of air transport has affected the manner in which the industry operates. A liberalised, harmonized and economically viable development of air transport, promotes the industry's sustainability. However, for liberalisation to achieve its desired

[p] Manual on the Regulation of International Air Transport, or the International Civil Aviation Organization (ICAO) provides the official definition of the freedoms of the air. Available at: http://legacy.icao.int/icao/en/trivia/freedoms_air.htm

objectives, some safeguarding measures must be put in place to ensure fair competition, safety, security, environmental protection, consumer protection and dispute resolution mechanism for effective participation and optimal benefits of all economies involved.

Within the framework of the national aviation policy the government should define its stance towards the liberalisation of air services which ranges from a restrictive policy with high constraints on clauses of ASA, to a fully liberal air transport policy based on “open skies” agreements without reciprocity. However, the direction adopted by the government towards supporting the liberalisation of air services or not, should come in harmony with the broader transport policy of other modes of transport, the national economic policy of fostering trade relations, opening up to new markets or promoting tourism (ICC., 2005).

4.1.3 Airport ownership

An important feature of the civil aviation plan is the definition of policy towards participation of the private sector, if any, in the financing, development and operation of infrastructure for the support of civil aviation. Before the 1980s, most airports around the world were owned and operated by the public sector. The rising passenger demand due to airline deregulation in the USA led to airports’ congestion and the need to invest in additional capacity and to increase the productivity of the existing airports. Therefore, governments headed towards commercialised airport governance by applying business-like models and allowing market forces, incentives and competition to affect the quality of service. Commercialisation models can incorporate different degrees of private sector involvement. There exist at least seven possible ownership/governance structures which differentiate between the degree and mode of the shift of airports out of public ownership (Gillen, 2011).

- Government owned/operated (US, Spain, Singapore, Finland, Sweden);
- Government owned, privately operated (US “via contracts”, Chile);

- Major airports which have public-private partnerships in the form of Build-Own-Operate (BOO), Build-Operate-Transfer (BOT) and management contract variants (India);
- Independent not-for-profit corporations (Canada);
- Fully private for-profit via IPO (Initial Public Offering) with stock widely held (originally BAA);
- Fully private for-profit via trade sale with share ownership tightly held (Australia, New Zealand);
- Partially private for-profit with private controlling interest (Denmark, Austria, Switzerland); and
- Partially private for-profit with government controlling interest (Hamburg Germany, France, China, Kansai-Japan).

Among these different airport governance/ownership structures, a government should identify through its civil aviation plan the airport governance structure which addresses the aviation sector priorities and then assists the government in achieving the desired goals for the civil aviation sector. For example, a government supporting a liberal air transport policy will need to adapt its airport governance/ownership approach to tackle the need for increased capacity, generate more revenues and offer services at a lower cost or promote regional development.

4.2 Hypothesis for best-in-class civil aviation strategy scenarios

A common definition for best-in-class would mean that the highest current performance level in an industry is to be used as a standard or benchmark to be equalled or even exceeded (Bretschneider et al., 2005). For aviation planning, a best-in-class civil aviation strategy signifies a plan that has consistently shown good results in a specific context. Additionally the results of the best-in-class should demonstrate being superior to those achieved by others while operating

under the same conditions. In other words, two or more countries that are pursuing similar policies towards the components of civil aviation strategy, (i.e. aviation administration institutional framework, degree of air service liberalisation and airport ownership model) should be enjoying comparable benefits of aviation. Where this is not the case, then one has to investigate the degree of fitness between the pursued aviation policy on the one hand, and the competitiveness level of the surrounding macro-environment factors (political, economic, social, legal and technological) on the other. That is because operating conditions have considerable impacts on the output of the air transport sector in a country (Itani et al., 2014), since the aviation policy is nested within other national policies directed towards social development, education, industry, defence, foreign affairs and trade relations (Craig, 2001a). From here rises the necessity to realize the significance of best-in-class civil aviation strategy scenarios.

Based on the three pillars that this study considers the main components of civil aviation strategy (i.e. aviation administration institutional framework, degree of air service liberalisation and airport ownership model), 18 theoretical civil aviation strategy scenarios are derived to form options for civil aviation policies for governments to follow (Table 7). Each scenario represents an exclusive combination of the three civil aviation strategy pillars. The scenarios are assigned numbers ranging from 1 to 18. The latter being the most liberal policy scenario. The numbering is purely indicative and does not have any numerical weight or impact.

Table 7: Eighteen theoretical civil aviation strategy scenarios

Scenario Number	Availability of CAA autonomous regulator	Degree of air service liberalisation	Airport ownership model
18	Yes	Full	PSP in ownership
17	Yes	Full	PSP in management
16	Yes	Full	No PSP
15	Yes	Semi	PSP in ownership
14	Yes	Semi	PSP in management
13	Yes	Semi	No PSP
12	Yes	Restricted	PSP in ownership
11	Yes	Restricted	PSP in management
10	Yes	Restricted	No PSP
9	No	Full	PSP in ownership
8	No	Full	PSP in management
7	No	Full	No PSP
6	No	Semi	PSP in ownership
5	No	Semi	PSP in management
4	No	Semi	No PSP
3	No	Restricted	PSP in ownership
2	No	Restricted	PSP in management
1	No	Restricted	No PSP

Source: (Itani et al., 2015)

Concerning the institutional framework, the availability of an autonomous regulator indicates that an appropriate institutional framework for civil aviation administration is in place where the roles, responsibilities and interaction of the aviation industry institutions (policy maker/ regulator/ service provider) are set by well defined laws and regulations. The result is an empowered and adequately funded CAA. While in the opposite case, where the structure, organization and funding schemes are not well developed, the civil aviation administration is found incapable of taking full benefit of their aviation systems and other assistance programmes (ECAC, 2007). Countries which suffer from a distorted civil aviation institutional framework tend to lack the ability to prevent conflicts arising from regulating the industry and providing aerodrome and air navigation services simultaneously.

For the second aviation strategy component which is the degree of air service liberalisation, this is based on the level of openness of ASA clauses. A “full” liberal air transport policy refers to lifting all restrictions on granting foreign operators air traffic rights including no limitations on capacity, tariffs and designation. While a “semi” liberal policy applies to countries pursuing a more conservative approach towards variants of the key market access features of ASAs. Such countries, for example, grant 5th or 6th freedom traffic rights, capacity, designation and tariffs options on case-by-case bases. As for countries following a “restricted” air transport policy, they negotiate and place constraints on features of bilateral ASAs. In this case traffic rights do not exceed the 4th freedom, with restrictions on capacity, tariffs and designation clauses. Finally, for the airport governance/ ownership model, this is explained through the definition of policy towards PSP in the ownership of airports, management of airports or simply a policy prohibiting any form of private sector participation whether in development, operation or ownership of infrastructure for the support of civil aviation.

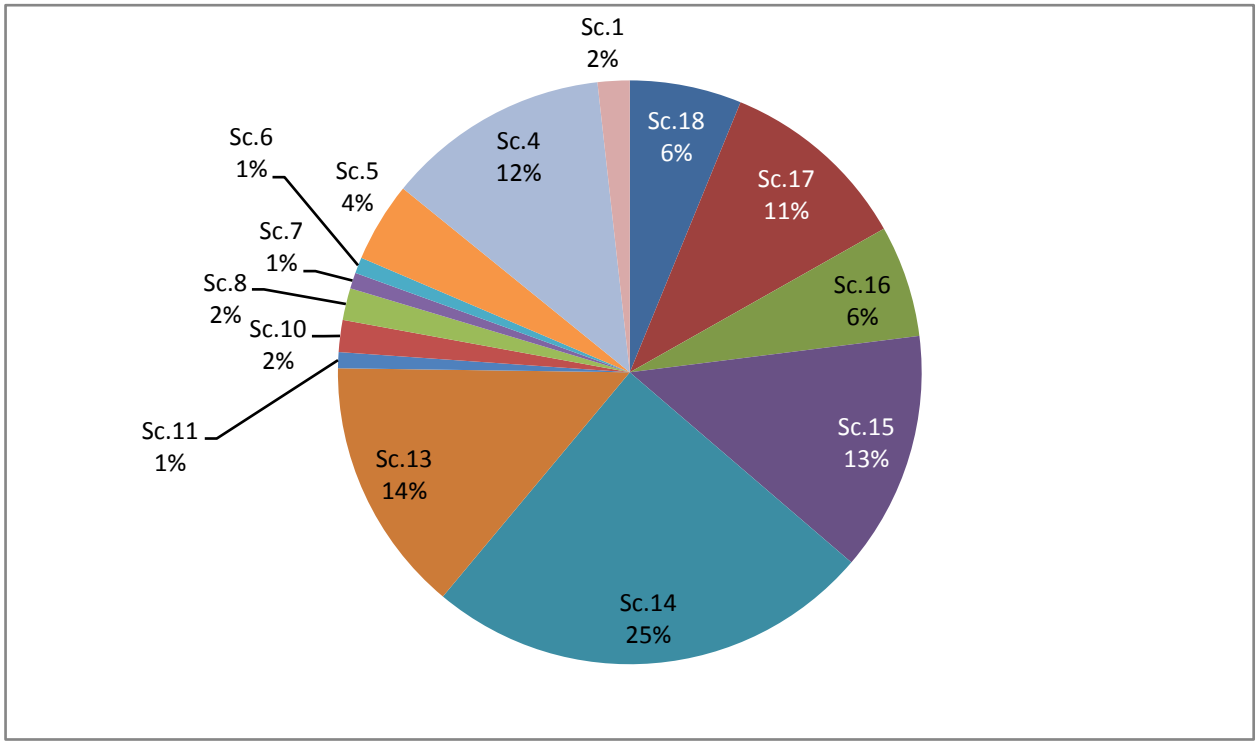
The 18 proposed scenarios are theoretical in nature and a more realistic approach should be taken in order to explore the best-fit aviation strategy scenario. A questionnaire was distributed to the civil aviation departments of 113 countries[q] in order to collect data on the application of the proposed 18 scenarios worldwide. Questions targeted the status of the institutional framework of the civil aviation administration, the policy that the country is pursuing towards the liberalisation of air services and the model of airport

[q] Survey participating countries: Albania, Algeria, Argentina, Armenia, Australia, Austria, Azerbaijan , Bahrain, Barbados, Belgium, Bolivia, Botswana, Brazil, Brunei, Bulgaria, Burundi, Cameroon, Canada , Chile, China, Colombia, Costa Rica, Croatia, Cyprus, Czech Rep., Ecuador, Denmark, Dominican Rep., Egypt, Estonia, Ethiopia, Finland, France, Georgia, Germany, Greece, Guatemala, Honduras, Hong Kong, Hungary, Indonesia, Iceland, India, Iran, Ireland, Italy, Jamaica, Japan, Jordan, Kenya, Korea, KSA, Kuwait, Kyrgyz Rep., Latvia, Lebanon, Lithuania, Luxembourg, Macedonia, Madagascar, Malaysia, Mali, Malawi, Malta, Mauritania, Mexico, Mongolia, Morocco, Mozambique, Namibia, Netherlands, New Zealand, Nicaragua, Nigeria, Norway, Pakistan, Panama, Paraguay, Peru, Philippines, Poland, Portugal, Oman, Qatar, Romania, Russia, El Salvador, Senegal, Serbia, Singapore, Slovak Rep., Slovenia, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Syria,Tanzania, Thailand, Trinidad &Tobago, Tunisia, Turkey, UAE, Ukraine, Uganda, Uruguay, UK, USA, Venezuela, Vietnam, Zambia, Zimbabwe.

ownership. The response rate was 40% through replies received from 46 civil aviation departments. The data about the remaining countries were collected through industry reports, specifically the ICAO's database on commercialisation and economic oversight, the WTO air Service Agreement Projector database and related civil aviation administrations' official web pages. A sample of the questionnaire is available in Appendix B.2 while a list of the 113 surveyed countries is found in Appendix B.1 with the respondents in capital bold font.

A preliminary overview of the data, as depicted in Figure 21, shows that there exist four scenarios which are not applicable in reality and that no country has adopted such an approach towards its aviation systems planning. This is because these scenarios—namely scenarios number 2, 3, 9 and 12—consist of contradicting approaches toward aviation strategy pillars. For example scenario 3 suggests that a country's civil aviation administration has no independency in regulating the air transport industry, and is pursuing a restricted policy towards the liberalisation of air services. However, this same country allows private sector ownership in air transport infrastructure which was originally owned by the government under such non-liberal operating conditions. The described situation is most likely to be far from being practical since the under developed capacity of institutions, regulations, oversight capabilities within the civil aviation administration in addition to a lack of coordinated plan towards the growth and development of the national aviation sector, will discourage private investors from acquiring stakes in a government owned aviation infrastructure.

Figure 21: Distribution of world countries over civil aviation strategy scenarios*



* Distribution is based on the survey's participating countries.

On the other hand, it is found that scenario 14, i.e. the availability of an autonomous civil aviation regulator, a semi-liberal approach towards the provision of air services and PSP in airport management and operation; is the most adopted scenario where 28 countries out of 113, representing 25% of the surveyed countries are adopting the same definition towards the main civil aviation strategy pillars.

A best-in-class scenario should also comply with international obligations and conform to the industry's global trends. For this reason another set of theoretical scenarios are disregarded since they comprise approaches counteracting international recommended practices for the development of civil aviation systems. Precisely scenarios 1 to 9, which suggest a civil aviation institutional framework with no clear separations between service provision and regulatory functions, should be dropped from the category of best-in-class suggested

scenarios. This is because the issues of modernization and corporatisation go hand in hand with the concept of separation between regulatory/oversight functions and service provision functions. Moreover, there is a tendency to link the separation of functions with an increase in efficiency and in responsiveness to the needs of the aviation sector, and thus to the introduction of a private sector managerial concept or the participation of private initiatives.

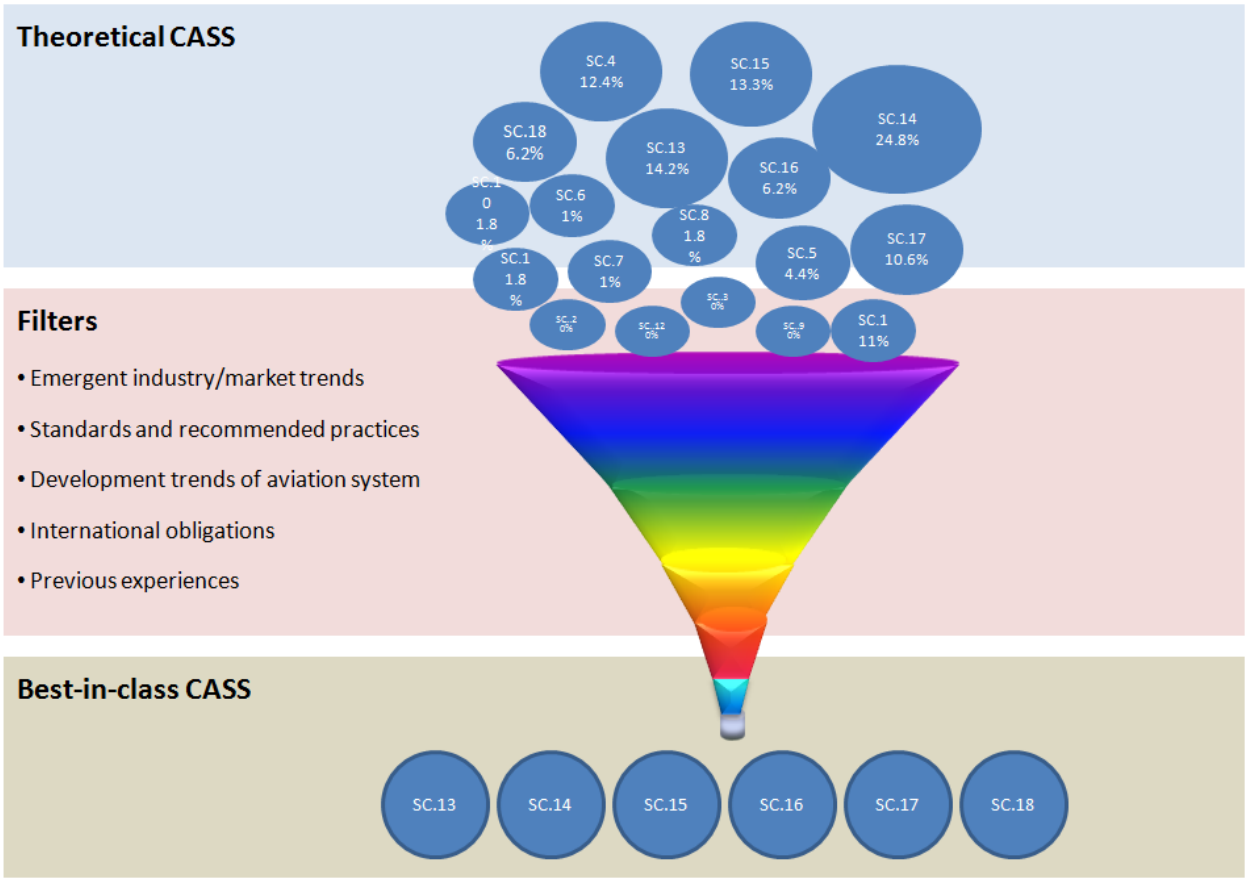
This view is advocated by the main international organizations such as the International Civil Aviation Organization (ICAO, 2006b; ICAO, 2009), World Bank (World Bank, 2010), Organisation for Economic Cooperation and Development (OECD, 2010) and Civil Air Navigation Services Organisation (CANSO, 2011) where all of them affirm that experience shows that CAAs are more successful when they are more autonomous and able to administer and manage their own budgets. Thus, separation will give the civil aviation administration more authority and the independence required to fulfil their regulatory obligations effectively. In other words, an aviation strategy advising no reform actions towards adapting its legal framework to international obligations may face critical situations due the regulator's inability to manage the industry effectively and answer the needs of the stakeholders which will ultimately affect the industry's output and hamper its growth. Accordingly, such scenarios are not classified under best-in-class aviation strategy scenarios.

The suggested best-in-class aviation strategy scenarios are further decreased by cutting out those that do not promote air service liberalisation, namely scenarios 1, 2, 3, 10, 11, 12. Developments in air service liberalisation have demonstrated that increased access to the international market for air service providers is a key component for allowing the air transport sector to maximise its contribution to the global economy. Liberalisation, particularly as it is exemplified in open-skies agreements, brings with it the economic benefits generated by a more competitive market place, promoting increased travel and trade, and enhancing productivity and economic growth. The ICAO has already developed and approved recommendations at the Fifth Worldwide Air Transport Conference in 2003 for countries to open up their markets. The number of

liberalising agreements that ICAO Member States have concluded bilaterally, regionally and plurilaterally/multilaterally over the past decade demonstrates a clear international consensus on the benefits of liberalisation. In 2003 there were 87 liberalised agreements involving 70 countries, while in 2012 there were over 400 liberalised agreements involving 145 States (ICAO, 2013). In addition, the number of liberalising regional agreements has expanded since 2003; for example, the Association of Southeast Asian Nations (ASEAN) members have concluded an agreement to achieve a single open-sky market by 2015, and other liberal agreements have been concluded by South Pacific Island States, the Caribbean Community and members of the Latin America Civil Aviation Commission (LACAC). Prior to that, in 2008, the IATA launched an "Agenda for Freedom" initiative, aimed at facilitating regulatory liberalisation. This initiative led to the signing by 12 governments and endorsement by the European Commission of a "Declaration of Policy Principles", which included *inter alia* a political commitment to full market access liberalisation (IATA, 2013)[r].

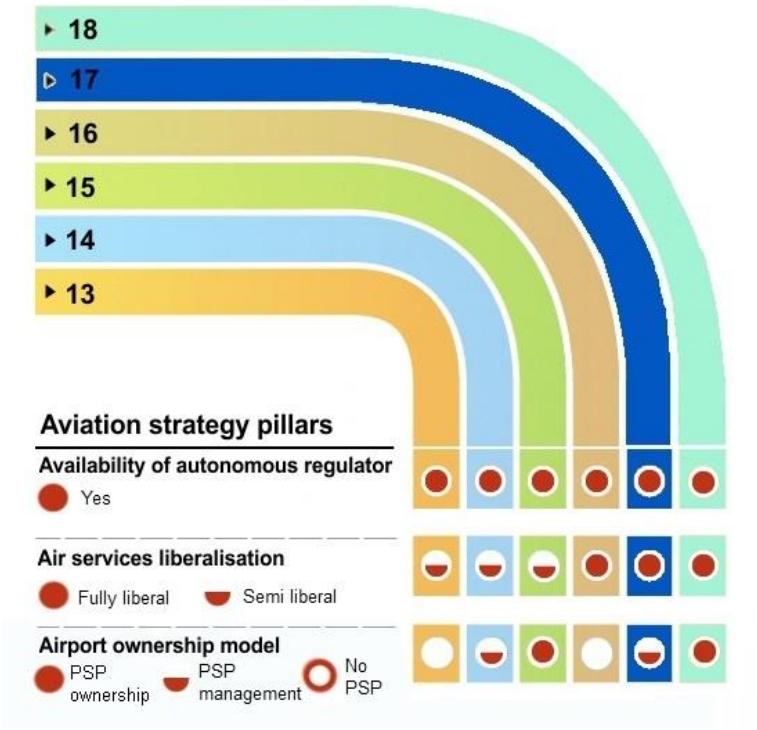
[r] List of countries that have signed/endorsed the Multilateral Statement of Policy Principles is available at: http://www.agenda-for-freedom.aero/Pages/default.aspx

Figure 22: Filtering civil aviation strategy scenarios



To sum up, international obligations, standards and recommended practices (SARPs), previous experiences, development trends in aviation systems and emergent industry/market opportunities all serve as filters for realizing what we refer to as “best-in-class” civil aviation strategy scenarios (Figure 22). Eliminating the scenarios which do not conform to international approaches for the development of the air transport industry’s institutional and regulatory frameworks, results in six aviation strategy scenarios, namely scenarios 13 to 18 inclusive (Figure 23). Within a specific macro-environment setting, each of the mentioned scenarios is able to produce a favourable output of the aviation sector in a said country. However, the choice among six best-in-class scenarios remains a national decision which a country has to make in order to seize the highest benefits from its aviation sector by taking into consideration the level of maturity of both its air transport sector and its operating environment.

Figure 23: Six best-in-class strategy matrix



4.3 Performance benchmarking through using Data Envelopment Analysis (DEA)

On a country level, the national operating environment represents the playing field that countries establish for their industries. (Porter, 1998a) argues that nations can create advanced macro-environment factors which serve as a framework for national advantage and contribute to the growth and sustainability of the nation's industries. Thus, industry sectors develop strategies based on national advantages to help them grow and prosper. Within the same context and to ensure effectiveness, best-fit civil aviation strategies serve as resource optimization tools to align national resources to support air transport priority objectives, such as ensuring connectivity and promoting social and economic welfare of a nation. In a recent research (Itani et al., 2014) established a link between the factors of national competitiveness—as building blocks of the aviation sector operating environment, and the output of the air transport industry on a national level. This section aims to identify the countries

that are able to use their national operating environment in an efficient manner while producing air transport output. Then it investigates the aviation policy scenarios adopted by these efficient performers. The main purpose of this step is to empirically verify the real utilisation of the identified six best-in-class aviation policy scenarios and establish a relation between the countries' performance and the aviation strategies they are pursuing.

At this point, it becomes relevant to use an efficiency estimation technique (here DEA) to identify the countries which are able to produce the maximum level of air transport industry output with given available macro-environment input resources. This section continues by discussing the theoretical assumptions of the Data Envelopment Analysis (DEA) method used for estimating air transport sector efficiency on national level through measuring the maximum potential output for a given set of inputs through the application of the country-level data of 52 countries here referred to as Decision Making Units (DMUs).

4.3.1 DEA in literature

DEA is a relatively new 'data oriented' approach that estimates the maximum potential output for a given set of inputs, and has primarily been used in the estimation of efficiency. It helps to evaluate the performance of a set of peer entities (the DMUs) that convert multiple inputs into multiple outputs. The method of DEA was first introduced by (Charnes et al., 1978) in the later 1970s while evaluating the efficiency of educational programmes for disadvantaged students. DEA has been applied in cases where the outputs are not clearly defined; for example in measuring productivity in government institutions or in public schools and hospital (Bedard, 1985). It is also helpful in determining the efficiency of DMUs that consume or generate inputs or outputs, which lack pricing (Button and Weyman-Jones, 1993). DEA is a (linear) programming technique and the basic model only requires information on inputs and outputs. DEA provides a scalar measure of relative efficiency by comparing the efficiency achieved by a DMU with the efficiency obtained by similar DMUs. DEA assumes a set of observed DMUs, {DMU j; j=1,...,n}, is associated with m inputs, {xij ; i=1,...,m}, and s outputs, {yrj ; r=1,...s}. In the method originally

proposed by (Charnes et al., 1978) the efficiency of the jth DMU is defined as follows:

$$\text{Eff} = \frac{\sum_{r} u_r y_{rj}}{\sum_{i} v_i x_{rj}}$$

where

yrj = the amount of the rth output from DMU j,

ur = the weight given to the rth output,

xij = the amount of the ith input used by DMU j,

vi = the weight given to the ith input.

The efficiency is then defined as a ratio of the weighted sum of the outputs to the weighted sum of the inputs. Then to measure the efficiency of DMU j0, the following ratio model is used.

Equation 3: DEA - Constant Returns to Scale model

$$\begin{aligned} \text{Eff} = & \underset{U_r, V_i}{\text{Max}} \frac{\sum_{r} U_r y_{rj_0}}{\sum_{i} V_i x_{ij_0}} \\ & s.t. \\ & \frac{\sum_{r} U_r y_{rj}}{\sum_{i} V_i x_{ij}} \leq 1 \quad ; \forall j \\ & U_r, V_i \geq 0 \quad ; \forall r, \forall i \end{aligned}$$

Generally, a range of DEA models have been developed by different scholars to measure efficiency and capacity in different ways. These largely fall into two categories of being either input-oriented or output-oriented models. In the input-oriented model, the DEA approach seeks the maximum possible proportional reduction in inputs while maintaining the outputs produced from each DMU. In the output-oriented model, this approach seeks the maximum proportional increase in outputs produced with a given level of inputs. The choice of input or

output-oriented models depends upon the output realization process characterising the industry (i.e. minimise the use of inputs to produce a given level of output or maximise the level of outputs, given the levels of the inputs). In this study and for the purpose of estimating the relative efficiency of national air transport output, the input variables used in the DEA model are the 12 factors of national competitiveness which were found to be significantly related with the air transport output under the SEM analysis. As these can not be reduced or manipulated easily, the input-oriented DEA model is less relevant to this study's case. Output-oriented DEA models are "...very much in the spirit of neo-classical production functions defined as the maximum achievable output given input quantities" (Fare et al., 1994). In this study, the measures of efficiency are estimated through using the following linear programming output-oriented DEA model.

Equation 4: Output oriented DEA model

$$\begin{aligned} \text{Eff} &= \underset{u_r, v_i}{\text{Max}} \sum_r u_r y_{rj_0} \\ &s.t. \\ &\sum_r u_r y_{rj} - \sum_i v_i x_{ij} \le 0 \qquad ;\forall j \\ &\sum_i v_i x_{ij_0} = 1 \\ &u_r, v_i \ge 0 \qquad ;\forall r, \forall i. \end{aligned}$$

A key advantage of DEA over other examined approaches, such as the Stochastic Production Frontiers (SPF)[s] is that DEA more easily accommodates both multiple inputs and multiple outputs. Additionally, DEA surpasses SPF by being able to indicate the maximum expected output for a given set of variable inputs or factors of production. As a result, it is particularly useful for analysis of multiple inputs of a diversified nature, because prior aggregation of the outputs is not necessary. The DEA technique was applied to the air transport sector in the late 1990's. Such practice was developed by (Lall, 2001; Gillen and Lall,

[s] Stochastic Production Frontiers (SPFs) are an efficiency measurement approach that measures the production function which defines the technological relationship between the level of input and the resulting level of output. For more information on SPFs see (Schmidt, 1986).

1997) to assess the US airports' productivity and performance, (Salazar de la Cruz, F., 2001) who investigated the input efficiency of Spanish Airports and (Jaržemskiene, 2012) who used DEA for evaluating the productivity and ranking of Baltic airports. (Scheraga, 2004), (Capobianco and Fernandes, 2004) applied DEA when measuring the productivity of air operators. However, only a few researchers have made attempts to investigate the issue on a larger than national scale, e.g. at a European level (Pels et al., 2003) or international level (Oum et al., 2003; Oum and Yu, 2004). It is worth mentioning that this research fills a gap in the literature of DEA application within the air transport sector. Unlike previous research, this study applies the DEA method to country-level data to assess the performance of the air transport sector on the basis of multiple outputs which countries produce and the multiple macro-environment inputs which they utilise.

4.3.2 Data, method and DEA results

The data used in the DEA calculations represent the country-level data of 52 DMUs that have different levels of national competitiveness and belong to different stages of development (Appendix A.3). Definitions of the variables included in the DEA model are available in Appendix A.1, while the values and the scores of each country's variables are listed in Appendix A.2.

The relationship ratio of the number of DMUs to the total number of input and output variables is one of the most important issues in DEA as it affects directly the number of efficient units and the DEA efficiency analysis. The DEA literature related to this topic provides different approaches. Let the term (Rv) refer to the ratio of the number of DMUs to the number of input/output variables (N_IO). Rv = n / (m+s), where n is the minimum accepted sample size, m is the number of inputs and s is the number of outputs. If Rv is too small, DEA loses its discrimination power in terms of number of efficient and inefficient units (Pedraja-Chaparro et al., 1999). Moreover, a number of rules of thumb are suggested in the literature to set an appropriate value for Rv. (Golany and Roll, 1989) recommended the first rule (R1) in which Rv should be greater than two. (Bankers, 1989) and (Cooper et al., 2007) suggested a second rule (R2) in

which Rv should be greater than three. A recent study by (Osman et al., 2011) investigated the impact of different Rv values on the DEA performance analysis and stated that the associated acceptable range for Rv value should vary in an interval [2.9—4]. In this study the ratio Rv equals to 3.2 which satisfies all the previously discussed rules [Rv = 52 / (12+4)]. Additionally, the sample size is in compliance with the minimum sample size recommendations in order to avoid convergence problems associated with over-specification[t].

In DEA, the envelopment surface will differ depending on the scale assumptions that underpin the model. Two scale assumptions are generally employed: constant returns to scale (CRS), and variable returns to scale (VRS). The latter encompasses both increasing and decreasing returns to scale. CRS reflects the fact that output will change by the same proportion as inputs are changed (e.g. a doubling of all inputs will double outputs); VRS reflects the fact that input indicators may exhibit increasing, constant and decreasing returns to scale. The analysis was undertaken using the program “DEA Solver Pro. 9.0”. For the purpose of the estimation of relative efficiency, each country-level air transport observed output is assumed to occur in the same time period in 2009.

A summary of DEA results in terms of number of efficient countries, average efficiency scores over all the sample units, with standard deviation, and maximum and minimum values of scores are presented in Table 8. The efficiency scores range from zero to 1, with 1 being fully efficient (i.e. 100% of capacity). Values less than 1 indicate that the country is less efficient (i.e. operating at less than full capacity given the set of fixed inputs).

The DEA output oriented model resulted in 23 efficient countries; seven of these are efficient under CRS and the other 16 are found to be using efficiently their input to produce optimal capacity output under VRS. These countries form the

[t] As a rule of thumb the sample size should be twice the sum of the inputs and the outputs. However, some researchers e.g. (Cooper et al., 2006) provide a formal recommendation about the sample size used in DEA which is represented in this formula: $N \geq \max [m*s, 3 (m + s)]$ where N is the minimum sample size of DMUs, m is the number of inputs and s is the number of outputs.

set of efficient frontiers representing the best practice of the sector (benchmark). It is worth mentioning that the USA and UAE showed the highest two operational frequencies of 29 and 19 respectively. That means the USA and UAE relative efficiency models are being used the most as a benchmark reference by other less efficient DMUs in an attempt to maximise their output.

Table 8: Summary of results of output oriented DEA model

Measures	**CRS-O**	**VRS-O**
Number of efficient units	7	16
Average Scores	0.676	0.700
Standard Deviation	0.289	0.325
Maximum	1.0	1.0
Minimum	0.149	0.156

Estimates of relative efficiency are obtained assuming both constant and variable returns to scale. As would be expected, the CRS analysis resulted in lower estimates of efficiency and greater estimates of capacity output than the VRS analysis. Further, when VRS were assumed, most countries were found to reflect efficiency at full capacity (Table 8).

Table 9: Relative efficiency scores and full capacity output

Country	Osberved outputs				Efficiency Score	Returns to scale (RTS)	Full capacity output			
	(O_1) Total passengers	(O_2) Contribution to GDP	(O_3) Contribution to employment	(O_4) Air connectivity index			(O_1) Total passengers	(O_2) Contribution to GDP	(O_3) Contribution to employment	(O_4) Air connectivity index
Australia	86,206,252	6.1	7.4	5.90	1	Increasing	86,206,252	6.1	7.4	5.90
Austria	21,817,267	1.7	1.8	9.40	1	Increasing	21,817,267	1.7	1.8	9.40
Belgium	21,314,463	2.3	2.5	12.03	0.889853674	Increasing	23,952,773	2.6	2.8	13.52
Brazil	95,739,209	1.3	1.0	2.67	0.158058784	Constant	605,719,003	8.2	6.3	16.89
Canada	83,993,192	2.8	3.3	13.44	1	Increasing	83,993,192	2.8	3.3	13.44
Chile	9,026,446	3.0	2.5	1.79	0.302960942	Increasing	29,794,091	9.9	8.3	5.91
China	294,101,226	1.0	0.8	5.70	1	Increasing	294,101,226	1.0	0.8	5.70
Colombia	14,899,126	1.7	1.9	3.02	0.189186657	Constant	78,753,577	9.0	10.0	15.96
Cyprus	6,729,554	15.2	16.2	4.84	1	Constant	6,729,554	15.2	16.2	4.84
Czech Republic	12,367,467	0.9	0.9	9.87	0.722252587	Increasing	17,123,465	1.2	1.2	13.67
Denmark	22,272,961	1.3	1.8	9.11	1	Increasing	22,272,961	1.3	1.8	9.11
Ecuador	8,143,766	1.6	1.7	2.39	0.183151427	Increasing	44,464,660	8.7	9.3	13.05
Egypt	10,885,033	8.0	6.6	4.29	0.689685229	Increasing	15,782,610	11.6	9.6	6.22
Finland	13,828,812	3.9	5.0	6.16	1	Increasing	13,828,812	3.9	5.0	6.16
France	117,561,564	3.9	3.9	11.64	1	Increasing	117,561,564	3.9	3.9	11.64
Germany	158,150,131	2.6	2.8	12.11	1	Increasing	158,150,131	2.6	2.8	12.11
Greece	32,882,441	6.0	6.7	6.13	0.594559329	Constant	55,305,567	10.1	11.3	10.31
Hong Kong SAR	45,581,242	8.2	7.3	4.88	1	Increasing	45,581,242	8.2	7.3	4.88
Hungary	8,081,067	1.2	1.3	8.63	0.509368739	Increasing	15,864,866	2.4	2.6	16.94
Iceland	1,837,165	12.9	12.3	3.87	1	Constant	1,837,165	12.9	12.3	3.87
India	102,984,100	1.5	1.8	3.82	0.215713284	Constant	477,411,951	7.0	8.3	17.71
Ireland	26,268,887	5.9	6.1	8.48	0.873987678	Increasing	30,056,359	6.8	7.0	9.70
Italy	101,823,760	1.5	1.7	9.03	0.504158502	Increasing	201,967,753	3.0	3.4	17.91
Japan	116,822,111	1.0	1.0	5.28	1	Increasing	116,822,111	1.0	1.0	5.28
Jordan	4,770,769	5.3	4.6	4.44	0.414163801	Constant	11,519,039	12.8	11.1	10.72
Kenya	6,279,492	3.7	3.0	2.05	0.256883022	Constant	24,444,948	14.4	11.7	7.98
Latvia	4,062,704	2.0	2.0	6.90	0.37125789	Increasing	10,943,078	5.4	5.4	18.59
Lebanon	4,985,499	17.0	16.5	4.63	1	Constant	4,985,499	17.0	16.5	4.63
Luxembourg	1,535,261	3.6	6.6	11.74	1	Increasing	1,535,261	3.6	6.6	11.74
Malaysia	42,807,496	3.6	3.1	3.91	0.389293199	Increasing	109,962,096	9.2	8.0	10.04
Malta	2,918,676	18.0	19.7	6.07	1	Constant	2,918,676	18.0	19.7	6.07
Mexico	56,568,195	2.0	2.1	4.52	0.417453507	Increasing	135,507,773	4.8	5.0	10.83
Netherlands	46,479,064	3.1	3.8	11.73	0.997896213	Increasing	46,577,052	3.1	3.8	11.75
New Zealand	48,046,439	11.5	12.0	2.03	1	Constant	48,046,439	11.5	12.0	2.03
Nigeria	1,365,343	0.6	0.5	1.94	0.156206182	Increasing	8,740,646	3.8	3.2	12.42
Norway	27,673,751	2.6	3.2	7.39	1	Increasing	27,673,751	2.6	3.2	7.39
Peru	9,316,650	1.7	1.5	1.81	0.149042581	Constant	62,509,988	11.4	10.1	12.14
Philippines	23,883,386	2.4	2.5	3.13	0.228248583	Constant	104,637,609	10.5	11.0	13.71
Poland	17,046,474	0.6	0.5	8.16	0.472743427	Increasing	36,058,617	1.3	1.1	17.26
Portugal	24,104,119	3.4	3.6	6.41	0.575178173	Increasing	41,907,221	5.9	6.3	11.14
Romania	7,984,057	0.9	0.9	6.77	0.394641451	Increasing	20,231,167	2.3	2.3	17.15
Russian Fed.	56,472,313	1.1	0.9	5.30	0.409834915	Increasing	137,792,831	2.7	2.2	12.93
Singapore	37,236,371	8.9	6.7	4.09	1	Increasing	37,236,371	8.9	6.7	4.09
South Africa	32,803,465	3.1	2.6	3.57	0.286763231	Constant	114,392,158	10.8	9.1	12.45
Spain	148,318,298	5.2	4.6	8.49	0.944191264	Increasing	157,085,014	5.5	4.9	8.99
Sweden	25,218,784	3.9	4.1	7.20	1	Increasing	25,218,784	3.9	4.1	7.20
Switzerland	35,928,169	2.5	2.9	1.08	1	Constant	35,928,169	2.5	2.9	1.08
Thailand	53,937,248	9.0	5.8	4.06	0.966814249	Increasing	55,788,636	9.3	6.0	4.20
Turkey	70,653,026	4.4	3.6	6.05	0.444675101	Constant	158,886,850	9.9	8.1	13.61
U A E	40,901,752	14.7	13.8	4.77	1	Constant	40,901,752	14.7	13.8	4.77
United Kingdom	198,531,887	5.0	5.0	11.55	1	Increasing	198,531,887	5.0	5.0	11.55
U S A	964,402,413	4.9	6.8	22.78	1	Constant	964,402,413	4.9	6.8	22.78

A number of observations can be made on the model results (Table 9). First, DEA helps in identifying the performance level of individual countries, as well as the overall efficiency of the whole sample. The overall average efficiency of output oriented relative performance (based on VRS assumption, VRS-O) of all countries is 70%, meaning that on average the countries included in the sample can produce 30% more output given the same level of input. On the other hand, out of 52 countries, 23 are using their inputs efficiently to produce maximum capacity output (100%). This means that the majority (29 countries) are performing less efficiently and therefore need to look into ways to maximise their outputs. The overall efficiency average score for less efficient performance countries is 47%, implying that all of them are performing at less than 50%

capacity. However, much of this underutilisation of capacity arose out of using the inputs in an inefficient way rather than not using enough variable inputs. If the inputs had been used differently, then the efficiency score for the underperforming countries would have been greater.

Additionally, the efficiency scores of the whole sample vary between 14% and100%, implying that least performing countries such as Peru, Nigeria and Brazil can learn from other efficient peer countries and utilise their given input efficiently to maximise the benefits of the air transport sector by producing up to 86% more capacity output. Further, the country level information provides guidance as to which countries exploiting their factors of national competitiveness may be in most need of capacity management measures. Such discrimination between the better performers and the under performers could guide policymakers and regulators when drafting strategies and plans. This will ensure full coordination and contribution of the country's national factors of competitiveness into producing an optimal air transport sector output which is represented here by number of passengers, aviation contribution to GDP and aviation contribution to employment.

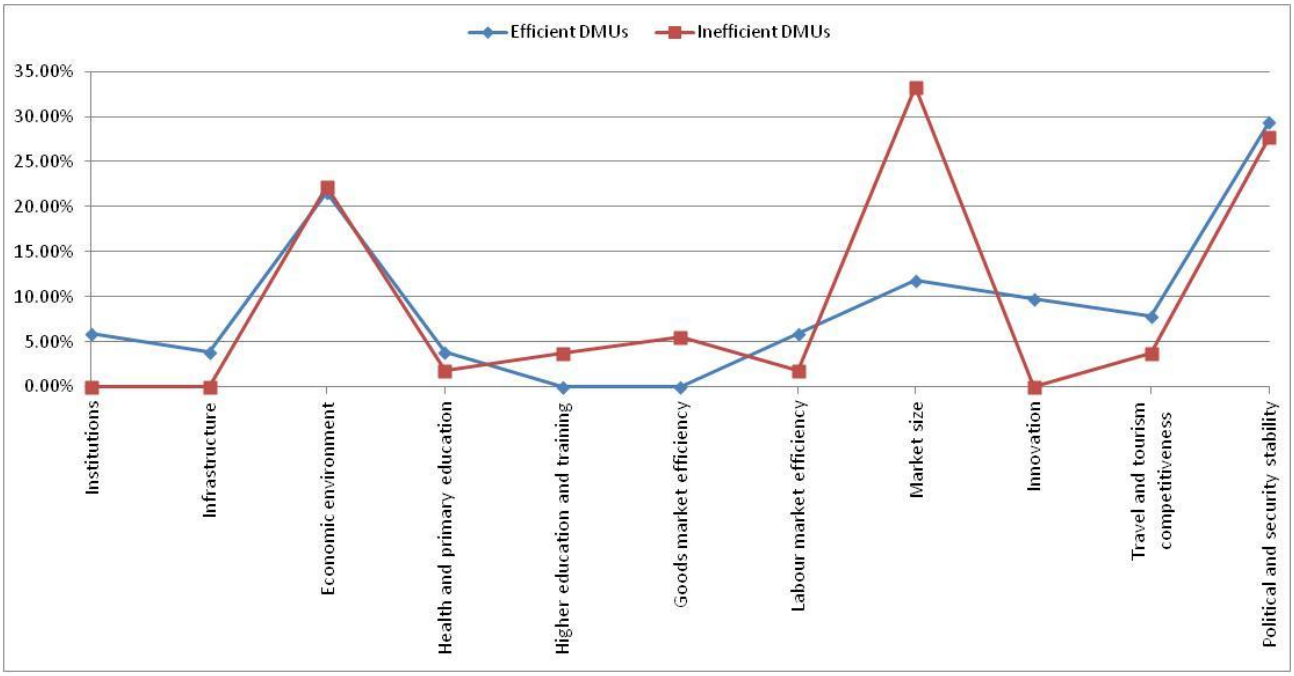
Although the examined countries are at different stages of development, it is evident that all the output efficient countries are efficiency and innovation driven economies. That means those countries are more dependent on efficiency and innovation enhancers than on their factor endowments to improve their competitiveness[u] (See Appendix A.5). In other words, countries in a more advanced stage of development tend to utilise given factors of national competitiveness in a more efficient way to maximise air transport output. The

[u] In line with the economic theory of stages of development, economies in the first stage are mainly factor-driven and compete based on their factor endowments—primarily low-skilled labour and natural resources. As a country becomes more competitive, productivity will increase and wages will rise with advancing development. Countries will then move into the efficiency-driven stage of development. Finally, as countries move into the innovation-driven stage, higher wages and the associated standard of living will be sustained through businesses which compete by producing new and unique goods, services, systems, processes through new technologies and/or the most sophisticated production processes or business models. For more info on theory of stages of development see: (Rostow, 1971) and (Porter, 1985).

results capture three efficient developing countries: China, UAE and Lebanon each of which relies on different competitiveness pillars to reach efficiency. The factors are: macro-economic stability, health and education.

At the input level, 65% of efficiently performing countries are utilising their political and security stability factor to maximise output compared to 52% of less efficient performing countries. As for the market size factor, 62% of underperforming countries tend to rely on this factor in comparison to 26% of maximum capacity performing countries. This indicates that efficient countries utilise given inputs in a different manner from less efficient ones. Even the weight distribution among different factors of national competitiveness shows a dissimilarity of dependency to maximise efficiency levels between well performing and underperforming DMUs. Countries which need to make improvements to their efficiency levels (i.e. less efficient DMUs) are depending mainly on inputs such as the education system, goods market and market size. Market size is said to be the factor with the highest weight, among other factors on which less efficient countries are depending by 33.3%, to produce the sector output. This is contrary to the best performing industry benchmarks (i.e. efficient DMUs) which depend on factors such as institutions, infrastructure, health system, labour market efficiency, business innovation and travel and tourism competitiveness, to produce the maximum capacity output of the air transport system (Figure 24). However, both efficient and less efficient DMUs are relying on two common factors, which are economic environment and political and security stability, to achieve maximum capacity output.

Figure 24: Weight distribution of inputs—efficient versus inefficient DMUs



Source: Compiled by the author

4.3.3 The impact of aviation policy on levels of efficiency

It is common to analyse efficiency in two stages. Stage one is to use nonparametric DEA to calculate the efficiency with which output is produced from inputs. Stage two uses truncated regression to relate efficiency scores to factors seen to influence efficiency but are neither inputs nor outputs (Simar and Wilson, 2007; Hoff, 2007). In the aviation literature, the two-stage efficiency analysis has been applied by different scholars: among these are (Barros and Dieke, 2008)(Scotti et al., 2012). To examine the hypothesis that the efficiency of a country's air transport sector is determined by different contextual variables, a two-step approach is followed, estimating the truncated regression model shown below:

$$\theta_{i,t} = \alpha_0 + \alpha_1 DEV_{i,t} + \alpha_2 LEB_{i,t} + \alpha_3 PUB_{i,t} + \alpha_4 MGT_{i,t}$$

where θ represents the DMU inefficiency score. Two types of exogenous variables are incorporated which are neither inputs nor outputs, but which

nonetheless exert an influence on DMUs' performance. The first type of variables influences the performance frontier, while the second has an impact on the countries' inefficiency scores. Stage of development *(DEV)* is the variable influencing the frontier. It represents the level of economic development of a specific DMU whether it is factor-driven, efficiency-driven or innovation-driven. The country's stage of development is computed from the (WEF, 2009a) classification of countries based on Michael Porter's theory of stages (Porter, 1985). Three variables are instead considered as determinants of countries' inefficiency scores: the level of liberalisation of air services (*LEB*) which is computed from the World Trade Organisation Air Services Agreement Projector database (WTO, 2012), and two dummies regarding the form of private sector participation in main/hub airports in the country (*PUB* is equal to one for publically owned and managed airports; *MGT* is equal to one for public airports that are managed by private companies).

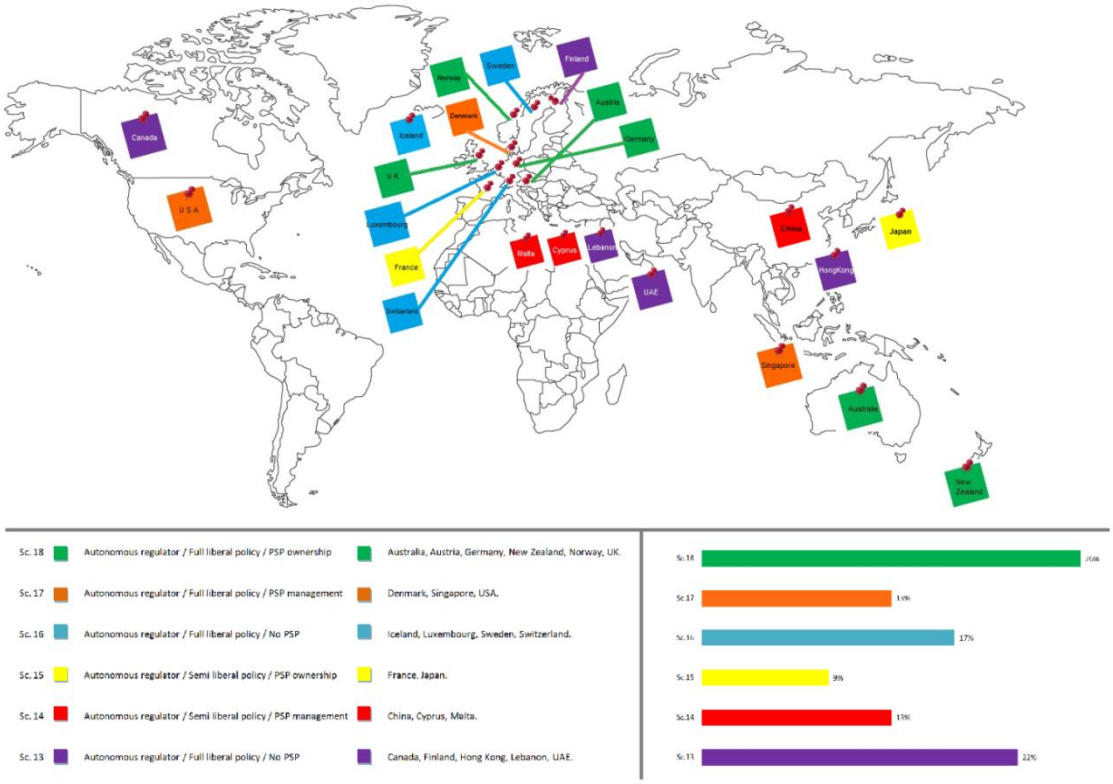
The truncated regression model appears to fit the data well, with positive and significant F-Significance equal to 0.0003 suggesting a 0.03% chance that the coefficients in the model are equal to zero. All the parameters are statistically significant and the estimations presented in Table 10, conform to *a priori* expectations. It is observed that efficiency increases as the stage of development increases. In other words, countries in more advanced stages of economic development tend to have a more efficient aviation sector than countries in the earlier stages. The level of liberalisation of air services is negatively related to inefficiency, implying that countries pursuing more restricted air liberalisation approaches tend to be less efficient. The coefficients of PUB and MGT are both statistically significant but the latter is negative. Among all the coefficients, PUB is the largest, indicating that publically owned and managed airports are the most inefficient among other types of mixed ownership or management airport models. This evidence confirms the results obtained by (Oum et al., 2008) who investigated the efficiency of the largest airports in the world, and by (Chi-Lok and Zhang, 2009), who studied the effects of privatisation on Chinese airports.

Table 10: Truncated regression results

Significance F	0.00034		
Parameters	Estimate	P-value	Standard error
Constant	0.061	-	-
DEV	0.006	0.000	(0.001)
LEB	-0.016	0.015	(0.011)
PUB	0.206	0.028	(0.088)
MGT	-0.153	0.049	(0.078)

Therefore, the model (at 95% confidence level) is representing a true relationship that exists in normal situations between aviation sector efficiency levels on the one hand, and the exogenous variables incorporating aviation policy elements on the other. Hence, policymakers have some control over the aviation strategy scenario that the country should pursue in order to enhance the performance of the aviation sector on a national level.

Figure 25: High efficiency performance countries and best-in-class aviation strategy scenarios



Based on the above, the well performing countries are categorized as per the aviation strategy adopted. Figure 25 provides a visual representation of the distribution of the efficient DMUs over their choice of aviation policies. It is apparent that all the well performing countries are following at least one of the best-in-class aviation strategies. No country of the better performers is adopting a scenario other than the earlier identified best-fit aviation strategies. This supports this study's hypothesis with regards to realizing the world's best-in-class aviation policies (Figure 23). The results of the two-stage DEA analysis and truncated regression indicate that the identified best-in-class aviation strategies include statistically significant aviation policy elements and are to be considered industry benchmarks on the basis of their correlation with air transport efficiency levels.

4.4 Identifying efficient peers and simulating an aviation policy development scheme

An important output of a DEA efficiency analysis is the identification of peers for less efficient units. For each less efficient unit, DEA identifies a set of relatively efficient performers, thus making a peer group, also named the reference set, for the less efficient unit. The peer set for a less efficient unit constitutes the units with the same optimum weights as the less efficient unit, but with a relative efficiency rating of 1. The identification of peer groups should be very useful in practice. Peer units can be used to highlight the weak aspects of the performance of the corresponding less efficient unit. The input/output levels of a peer unit can also sometimes demonstrate useful target levels for the less efficient unit (Martic et al., 2009).

In this study it is of high importance to identify relatively efficient peer groups for less efficient countries. These identified peers act as a benchmark for efficient operating practice and serve as a resource-optimization tool for the efficient utilisation of resources. Peers guide poorer-achieving countries to realize the best-fit combination between aviation policy on the one hand and the level of national competitiveness and aviation output on the other. In other words, poorer-performing countries may learn from other peer efficient countries and utilise their given inputs efficiently to maximise the benefits of the air transport sector by producing more capacity output. Further, DEA results provide guidance as to which countries exploiting their factors of national competitiveness may be in most need of capacity management measures, as some countries may be giving more weight to input variables of secondary importance or neglecting the utilisation of variables of major importance. Table 11 shows the peers for each less efficient country included in this study.

Table 11: Less efficient countries and relatively efficient peer groups with developing countries in capital bold font

Less efficient countries	Efficient peer groups
Belgium	Canada, Denmark, Singapore, USA
BRAZIL	**LEBANON**, UAE, USA
Chile	Canada, New Zealand, Norway, Sweden, UAE
COLOMBIA	Malta, UAE, USA
Czech Republic	Canada, USA
ECUADOR	Luxembourg, UAE, UK
EGYPT	Germany, UAE, USA
Greece	Cyprus, New Zealand, UAE, UK
HUNGARY	Canada, USA
INDIA	UAE, USA
Ireland	Canada, Iceland, New Zealand, USA
Italy	Canada, USA
JORDAN	Iceland, Malta, UAE, USA
KENYA	**LEBANON**, Malta, UAE, USA
Latvia	Canada, Iceland, USA
MALAYSIA	Canada, New Zealand, UAE, USA
MEXICO	Canada, **CHINA**, Luxembourg, UAE, USA
Netherlands	Canada, Denmark, Hong Kong, Luxembourg, Singapore, UK
NIGERIA	Canada, Luxembourg, UAE, UK
PERU	**LEBANON**, Malta, UAE, USA
PHILIPPINES	**LEBANON**, Malta, UAE, USA
Poland	Canada, USA
Portugal	Canada, Iceland, New Zealand, UK
ROMANIA	Canada, USA
Russian Federation	Canada, **CHINA**, Germany, USA
SOUTH AFRICA	**LEBANON**, Malta, UAE, UK
Spain	Germany, Singapore, UAE, USA
THAILAND	**CHINA**, UAE, UK
TURKEY	**LEBANON**, UAE, USA

Source: Compiled by the author using “DEA Solver Pro. 9”

The peer analysis approach provides each less efficient country with a reference set of countries which are able to utilise their factors of national competitiveness to reach an improved air transport industry output. For example, Brazil is benchmarked against Lebanon, UAE and USA’s operation practice for efficient utilisation of resources in order to produce the intended

aviation output. The analysis of the weight of inputs' utilisation for the DEA sample shows that Brazil relies on the market size indicator more than other factors of national competitiveness to produce effective industry output. However, Brazil's peers are able to produce higher output levels due to their dependence on different macro-environment factors such as institutions, health and education and macro-economic stability as in the case of USA, Lebanon and UAE.

The importance of the peer analysis approach is that it serves as a benchmarking tool to assist aviation policymakers to simulate successful practices in aviation policy development for efficient use of available resources to bridge performance gaps and achieve full operating capacity.

Conclusion

The results of the empirical analysis indicate that international obligations, SARPs, previous experience and development trends in aviation systems, all serve as filters for realizing what is referred to as "best-in-class" civil aviation strategy scenarios

While the two-stage performance analysis through using DEA and truncated regression shows that countries in more advanced stages of development have more efficient air transport sectors than those operating in factor-driven environments. A more liberal air services approach is said to be of positive influence on efficiency levels. Further, private airports are found to be more efficient, while public airports are even less efficient than those with a mixed ownership/management model.

The analysis provides both a theoretical and empirical set up for realizing best-in-class aviation strategy scenarios. The results suggest a linkage between the air transport sector's performance measure and aviation policy elements where it is not sufficient to only explain performance but necessary to be able to measure it and comprehend how policymakers can affect the air transport industry performance. This can be achieved by realizing the level of the

country’s economic development and working on enhancing the policy elements that induce a more efficient industry performance. The influential policy elements such as liberalisation and the form of airport ownership/management may serve as tools for the efficient utilisation of resources. They guide underachieving countries and some nations in the developing world to achieve the best-fit combination between aviation policy and level of national competitiveness. The results call upon aviation policymakers to adopt an efficient peer analysis approach to select the best-fit aviation strategy out of the identified influential policy elements to bridge performance gaps and achieve full operating capacity. As a result, governments are more enabled to set the appropriate vision for the future of civil aviation and establish an approach to direct and prioritize investment in their civil aviation sector.

5 CHAPTER FIVE: PROPOSED FRAMEWORK FOR AVIATION POLICY DEVELOPMENT

Introduction

Limitations to predicting the future present considerable challenges to policymakers. For most sectors, including the aviation sector, predicting civil aviation system behaviour is difficult. This makes the approach of devising aviation policy based on a systematic and structured methodology, a credible option.

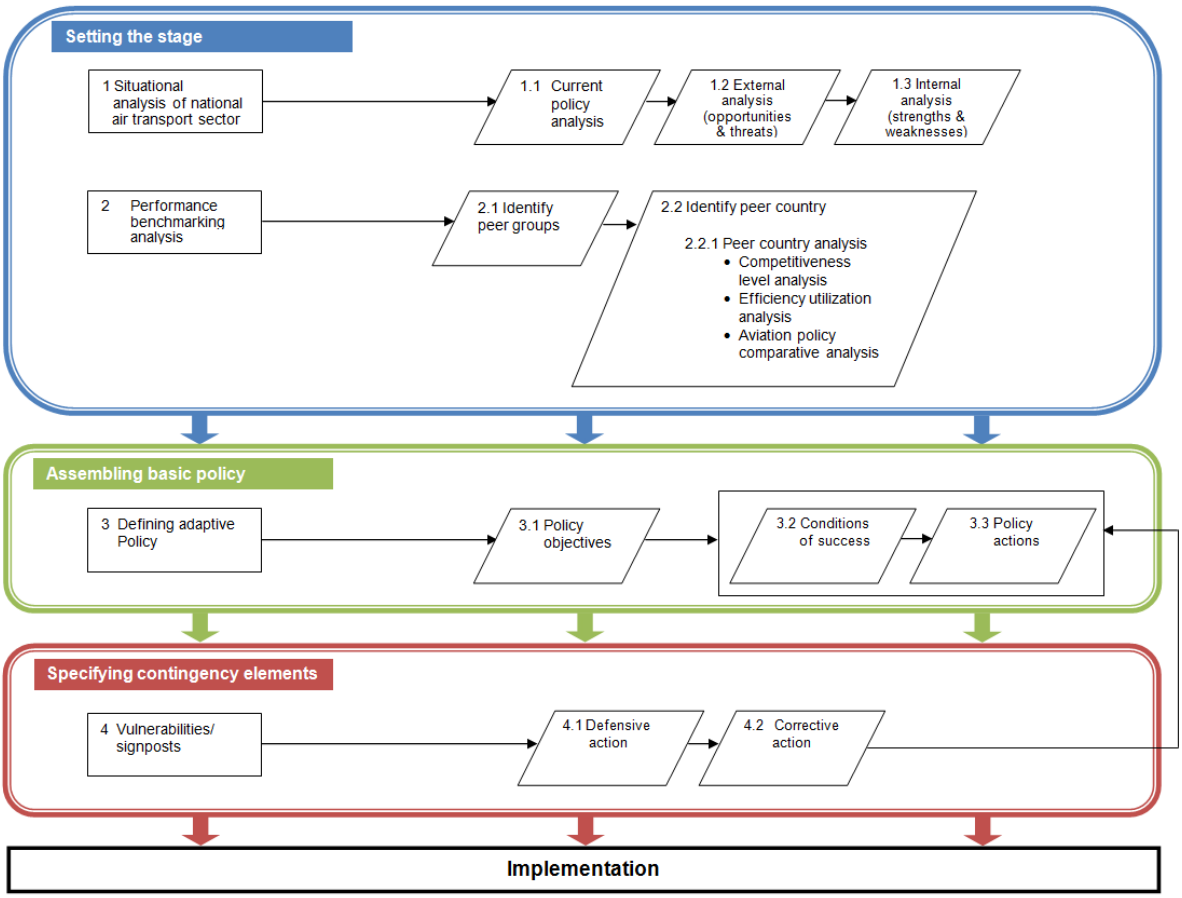
The analysis carried out in this study indicates the existence of an interrelationship among the macro-environment factors, the aviation sector output, the aviation policy elements and the sector's efficiency levels. This chapter presents the specifications of a systematic framework which can be used to design policies for the civil aviation sector. The advantages of this framework are twofold: (a) it incorporates elements of strategic and contingency planning; and (b) the selection of the basic aviation policy decision is established through a peer benchmarking approach. The end of the chapter provides an illustrative example of the aviation policy framework where the Hashemite Kingdom of Jordan (hereafter referred to as Jordan) is studied to explain the framework's elements and flow of process.

5.1 Aviation policy development framework

The framework depicted in Figure 26 addresses the high level of uncertainty confronting aviation policymakers. Additionally, it comprises elements of strategic planning and performance benchmarking. The framework consists of three phases: (a) setting the stage (b) assembling basic policy, and (c) specifying contingency elements. The process starts with the situational analysis step that analyses current policy, and identifies the opportunities and threats of the national aviation sector as well as its strengths and weaknesses. The process continues by setting a performance benchmarking platform that identifies efficiently performing peers and proceeds with peer country analysis.

In the second stage, the basic policy elements are assembled, making policy objectives explicit and defining the conditions necessary for success in order to reach appropriate policy actions. Then the process enters its final stage through a forward-looking analysis by specifying the remaining pieces of the policy and identifying the policy signposts which need to be tracked to determine whether a defensive action or a corrective action is to be taken. The framework presented provides assistance for policymakers to develop a view on an integral policy vision for the entire civil aviation system.

Figure 26: Aviation policy development framework



Source: Author; (Marchau et al., 2010)

5.1.1 Setting the stage

The first phase in the policy making framework is setting the stage. This phase consists of two steps; the first is the situational analysis of the national air transport sector. In this step the current aviation policy is analysed with a description of the timing and circumstances under which each policy action is taken. Afterwards, the foreseen strengths, weaknesses, opportunities and threats of the national air transport system are specified. This specification leads to the second step in the stage-setting phase which is the performance benchmarking analysis. The benchmarking in this step is performed by using DEA for measuring the relative efficiency performance of the aviation sector of other countries based on multiple inputs and multiple outputs. Out of the performance benchmarking, comes the peer group, which includes the countries that are able to consume their multiple inputs efficiently in order to produce the intended aviation sector output. Among the better performing peers, the country with the closest level of national competitiveness to the country under study is identified as being considered the best-match peer country. This best-match peer country is studied in terms of efficiency utilisation of its macro-environment factors to produce efficient aviation output. Moreover, the aviation policy of the peer country is analysed in terms of the policy impact on industry output. At this point, phase one is completed and the policymakers now have enough background information to proceed to the second phase which is assembling the basic policy.

5.1.2 Assembling basic policy

The second phase in the aviation policy making framework is assembling the basic policy. This step includes three related activities: (1) specifications of policy objectives, (2) identification of the conditions that must be available in order for the policy to be successful, and (3) deciding on policy actions which are the policies that need to be implemented and would produce change in the aviation system. For example: adopting open-skies air transport agreements,

allowing private sector ownership in state-owned airports, or restructuring of the civil aviation administration.

5.1.3 Specifying contingency elements

The success and failure of the policy actions should be defined in terms of sets of possible outcomes. The policy effects remain indeterminate estimates because the outcomes of a policy choice cannot be clearly identified upon making a choice. Under such circumstances, it becomes necessary to take a forward looking analysis through specifying the contingency elements of the policy. The first step in the third and last phase of the policy development framework is the identification of vulnerabilities which are possible or certain adverse threats to the basic policy. These vulnerabilities can decrease the approval of the policy because they are a risk to its success. Here it becomes important to translate the necessary conditions for policy success into signposts that are information that must be monitored in order to decide whether defensive or corrective actions should be taken.

Defensive actions are taken to explain the policy, protect its benefits or face external challenges. Defensive actions do not involve any changes in policy objectives, conditions of success or existing policy actions. On the other hand, corrective actions are amendments to policy to counter specific triggers to remedy pieces of the existing policy in order to improve the chances of its success. These corrective actions may involve modifying the conditions of success, or implementing additional policy actions. Any activity following the specification of the policy's contingency elements falls into the implementation phase.

5.2 An illustrative example

The example provided in this section is intended to illustrate the aviation policy development framework depicted in Figure 26 and described in Section 5.1. It uses a concrete example to present the different phases of the policy making framework if it is to be developed for civil aviation in Jordan.

Jordan has been selected as the context of this study on the basis that the country has undergone a major process of economic reforms which started in the mid-1990s. These economic developments have found their way to the air transport sector through a series of decisions. However, insufficient funds to develop and upgrade the aviation sector pushed Jordan in 1996 to rely on foreign funds from the Canadian Government through the Canadian International Development Agency (CIDA). Despite the fact that the Government of Jordan followed the consultants' recommendations for aviation policy decisions based on international best practices, the performance benchmarking results for 2009 indicate that Jordan's aviation sector efficiency falls below the average level of relative efficiency performance compared to the countries included in the study.

Jordan's case, elaborated in the coming sections, closely follows the representation of the proposed aviation policy development scheme. Specific examples are provided to describe the various components of the three phases of the framework that capitalize on national priorities and the country's competitiveness levels.

5.2.1 Setting the stage

In this first phase of the aviation policy development framework, two types of analysis are performed the situational analysis of the national air transport sector and the performance benchmarking analysis.

- Situational analysis of the air transport sector in Jordan

In order to make this example illustrative, the situational analysis of the air transport sector in Jordan looks into Jordan's current aviation policy and specifies the internal strengths and weaknesses as well as the external opportunities and threats.

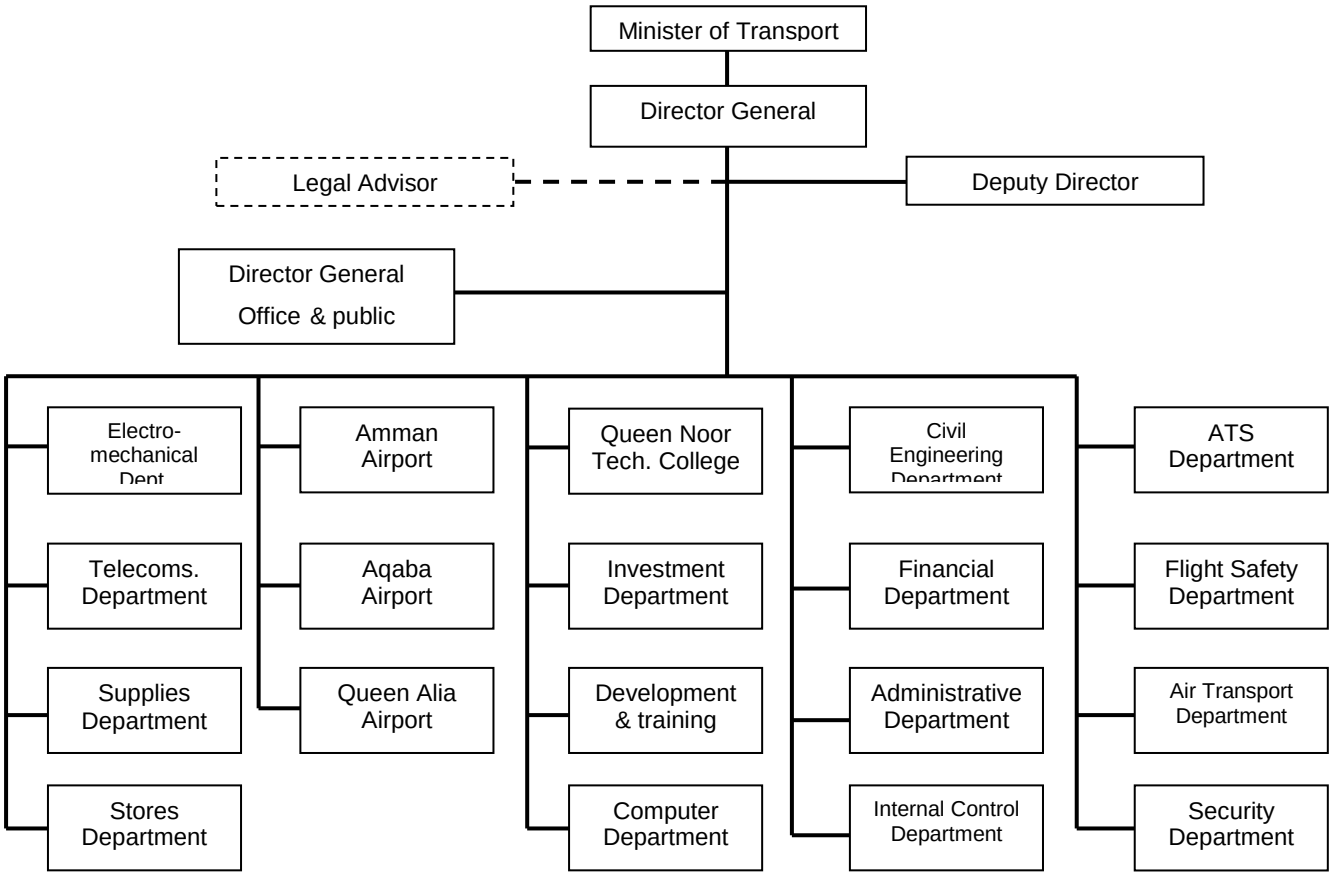
To analyse the *current aviation policy* the institutional framework of the Jordanian civil aviation administration is examined in addition to liberalisation of

air services and the form of PSP in the management of hub airports. The CAA in Jordan falls under the organizational structure of the Ministry of Transport (MoT). The CAA was established in 1950 to undertake all aviation affairs in the country. The Government of Canada funded the restructuring project of the civil aviation sector in Jordan through the Canadian International Development Agency (CIDA). Besides the civil aviation restructuring, the project comprised an advisory study for the upgrading of the Queen Alia International Airport (QAIA) through improving the passenger terminal building and one of the runways[v]. The organizational structure of the former civil aviation and airports administration had 20 separate departments reporting to the Director General of Civil Aviation (Figure 27). The former administration conducted a fair level of aviation activity and oversight through administering the country's three airports (QAIA, Amman Airport and Aqaba Airport).

The capital and operating budget provided by the MoT fell short of the requirements needed to support the civil aviation to operate and to upgrade the national infrastructure. Although the overflying aeronautical revenues handled by the CAA Air Traffic Services Department generated around 38% profit over direct operating costs in 1997 (amounted to over 10$mn), all of the revenues were first received by the national treasury (Craig, 1998).

[v] The feasibility study for the restructuring of the CAA and the commercialization of airport operations was performed by: Architects Crang & Boake, Sypher and AirPlan Aviation Technical Services for Canadian International Development Agency and the Hashemite Kingdom of Jordan, July, 1996.

Figure 27: Organizational structure of the former CAA of Jordan



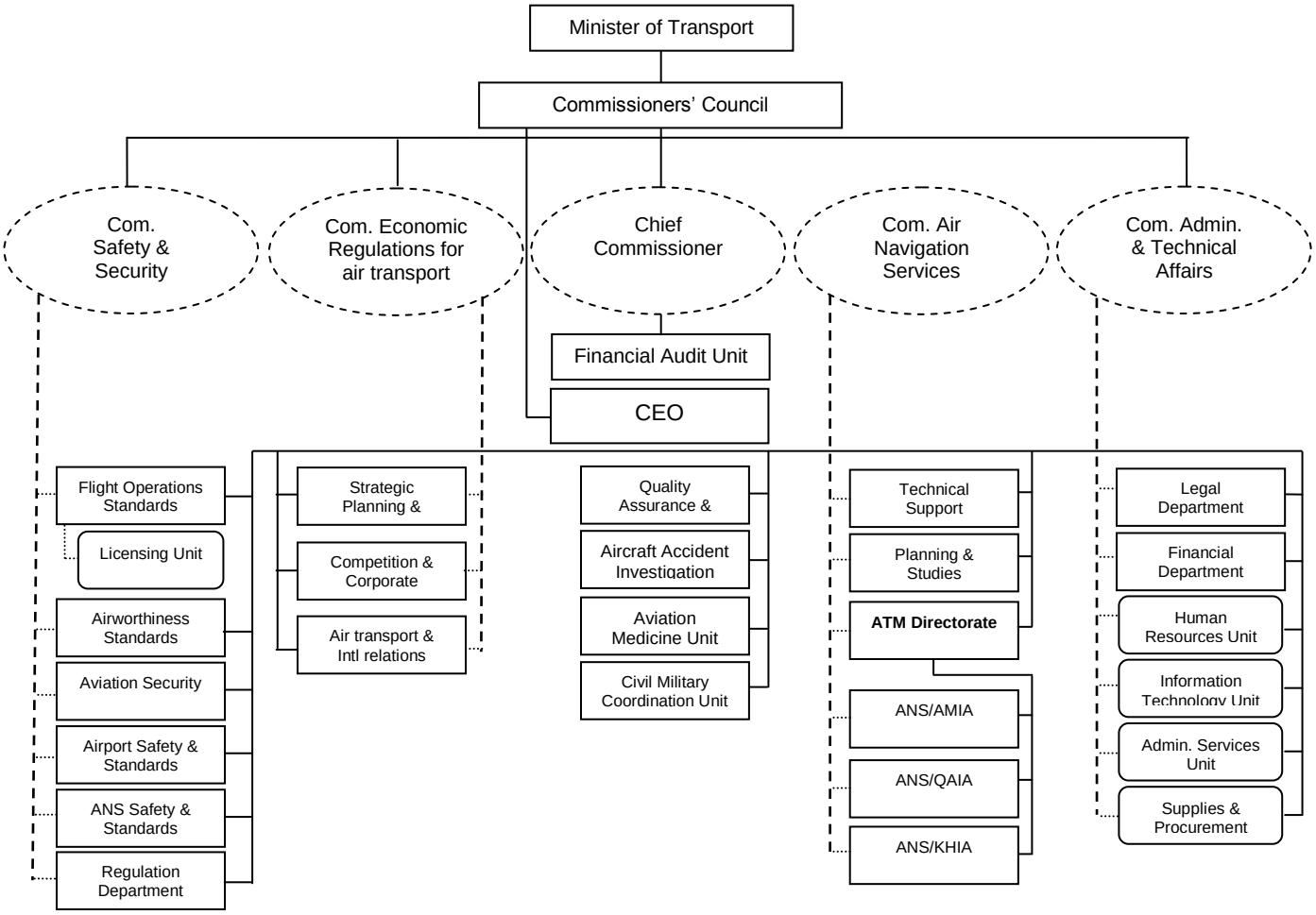
Source: (Craig, 1998)

The result of restructuring yielded the creation of a commercial corporate Civil Aviation Regulatory Commission (CARC) that is owned and operated by the Government of Jordan through five departments named commissions that report to the Commissioners' Council through a Chief Commissioner. The Council is accountable to the Minister of Transport for all the matters involving the CARC (Figure 28). The CARC replaced the CAA in accordance with Article (68) of the Civil Aviation Law number (41) of 2007. The aviation law has granted the CARC both financial and administrative independence. Article (7) of the civil aviation law designated responsibilities and obligations undertaken by the CARC to promote the development of civil aviation safety, security and environmental regulatory compliance, while ensuring the economic

competitiveness of a liberalised aviation industry. A list of all the parts of Jordan's Civil Aviation Law no. 41/2007 is available in Appendix C.

A huge achievement of the civil aviation administration restructuring in 2007 was the reduction in staff numbers by 41% from the 1,480 employees of the former structure to the 870 employees of the newly established CARC.

Figure 28: Organizational structure of the newly established Civil Aviation Regulatory Commission (2007)



Source: (CARC, 2014)

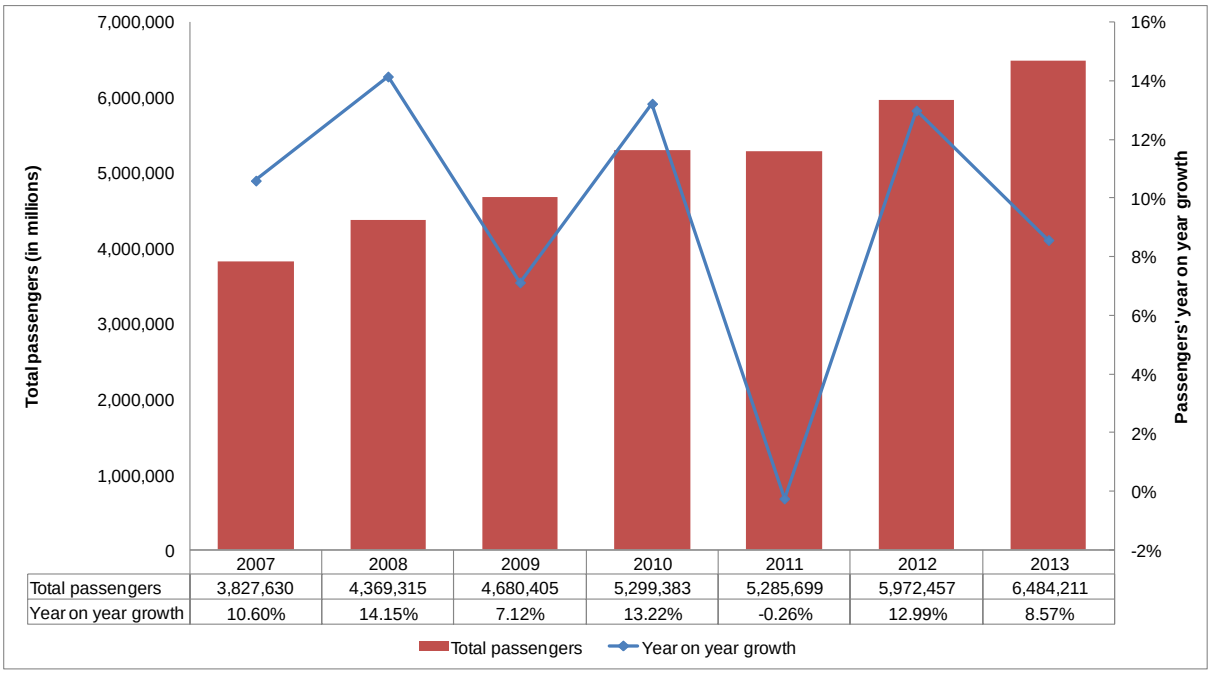
Concerning air services liberalisation, in 2007 the Government of Jordan embarked on liberating its air transport sector through regional and global alliances. To achieve a better competitive position and to satisfy national economic interests, a two-year National Air Transport Strategy (2009 to 2011) was put into effect. The strategy aimed at paving the way towards full

liberalisation without restrictions while recognizing the interests of the Jordanian air carriers. Since 2009, the CARC has concluded 31 “open skies” Air Service Agreements (ASAs) in line with the new strategy towards openness.

The year 2010 was a remarkable year in the history of Jordan’s air transport sector. The Jordan-EU Mediterranean aviation agreement was concluded and through it Jordan was announced as an “Open Sky” without any restrictions by the end of 2011. The CARC took active steps to liberalise the air transport sector through making regulatory changes to encourage private sector investments and to allow for licensing new air carriers. Additionally, in February 2010 the CARC terminated the “Route Exclusivity Agreement” with the Royal Jordanian (RJ) opening the market for more competitiveness. However, this step by the government did not reduce by very much the dominance of RJ over the Jordanian aviation market. RJ represents more than 95% of the domestic market compared to domestic airlines and it also dominates with 52% of the international market compared to foreign airlines (CAPA, 2012a).

The forward steps towards a more liberal provision in air services and the developments in aviation policy have led to an increase in total international passenger numbers for scheduled traffic with a CAGR of 9% for years 2007 to 2013 (Figure 29).

Figure 29: Jordan's total international passengers on scheduled airlines (2007–2013)



	2007	2008	2009	2010	2011	2012	2013
Total passengers	3,827,630	4,369,315	4,680,405	5,299,383	5,285,699	5,972,457	6,484,211
Year on year growth	10.60%	14.15%	7.12%	13.22%	-0.26%	12.99%	8.57%

Source: (ICAODATA, 2014a)

Concerning the airports, there are three civil airports in Jordan which are: Amman-QAIA; Amman-Marka International Airport; and Aqaba-King Hussein International Airport. Marka Airport was the home hub of RJ until 1983 when QAIA was opened.

The idea of airports' commercialisation in Jordan goes back to 1944 when the government recommended running QAIA on a commercial basis in preparation for upcoming privatisation plans. In 2005, the MoT announced an international tender for the expansion of QAIA. Six international consortia were invited to bid under the form of a build-operate-transfer (BOT) contract. The International Airport Group (IAG), led by Aéroports de Paris (ADP) Management (5%), J&P Overseas (10%), J&P Avax (10%), and three financial investors, EDGO (10%), ADIC (40%) and Noor (25%), won the BOT contract in 2006. The Government and the ADP Management-led consortium signed a 25-year concession agreement in 2007 where the government will receive 54.5% of total revenues in the first six years, then 54.6% thereafter. Considered the first successful

Pubic Private Partnership (PPP) in the Middle East and Jordan, the agreement has seen the expansion of QAIA's capacity from 3.5 million passengers in 2007 to over 6 million in 2013, in addition to the opening of a new terminal in 2013. According to the International Finance Corporation (IFC), the new airport is expected to create 23,000 jobs and will enable Jordan to strengthen its position as a tourist and economic centre by offering an exceptional travel experience to business and leisure travellers, setting QAIA as a convenient transfer hub (IFC, 2009)

Other commercialisation decisions included the transfer of the King Hussein International Airport in Aqaba to the Aqaba Airport Company (AAC) in 2007[w]. Another private shareholding company was incorporated in 2008 to take over the management and operations of Amman-Marka International Airport. The Jordan Airports Company (JAC) was entrusted with the commercial development of Marka Airport.

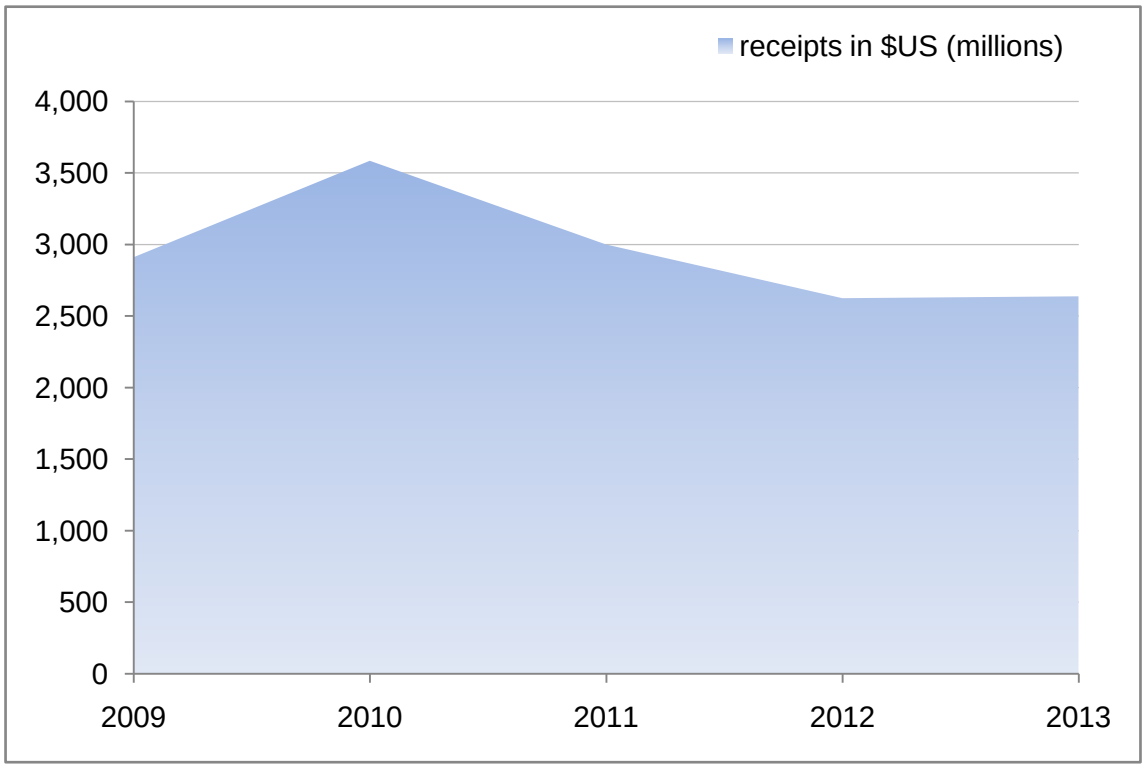
The Jordanian Civil Aviation Regulations (JCARs) endorsed the transfer of airport management and operations to the airport companies, while keeping the regulatory oversight tasks for the CARC. The Civil Aviation law forms the legal grounds for setting user charges while the CARC maintains a price monitoring that is subject to annual revision (ICAO, 2011).

Scanning the internal and external environment facilitates the specification of strengths to be developed into opportunities and the identification of weaknesses that might pose threats. Jordan is an upper-middle-income country with about 6.3 million inhabitants and a *per capita* Gross National Income (GNI) of $5,214 (World Bank, 2013). Situated strategically at the tip of the Red Sea, which links Africa to the west with Asia to the east, and laying within close proximity to Europe in the north, Jordan has historically served as a transit hub for goods and services, travellers and pilgrims. Furthermore, despite the

[w] Aqaba Airport Company (AAC) is a subsidiary of a private shareholding company named Aqaba Development Corporation (ADC) which is dually owned by the Government of Jordan and the Aqaba Special Economic Zone Authority (ASEZA).

country's shortage of natural resources and its sensitive Middle Eastern location at the heart of the region's political turbulences, Jordan's affirmative political standing coupled with an abundance of historically noteworthy, religiously significant, and naturally unique landmarks have all succeeded in attracting an increasing number of tourists each year. Tourism, both for business and leisure purposes, makes a large contribution to the Jordanian economy, with foreign visitors spending just over USD 3.6 billion each year (Oxford Economics, 2011b). However, the tourism sector in Jordan has been adversely affected by the region conflicts in Syria, Iraq and Egypt. Tourism receipts fell by almost 13% in 2012 compared to 2013 (Figure 30) with almost 20% of tourists arriving in Jordan by air.

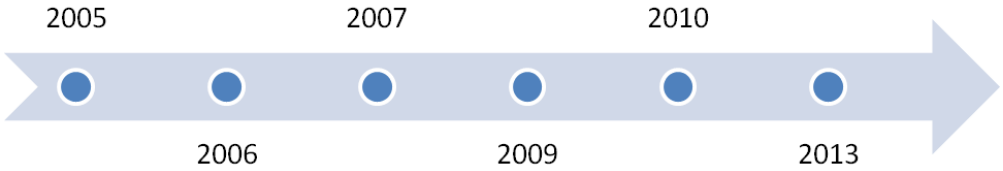
Figure 30: Tourism receipts in Jordan in millions $US (2009 – 2013)



Source: (EuroMonitor, 2014)

These factors have all given importance to the country's transportation sector. The transportation sector has significant importance for the economy of Jordan, as the government has realized the benefits of investing in the transportation infrastructure as a solid lever for other sectors' prosperity, i.e. mainly the travel and tourism sector. Efforts towards advancement materialized by 2006 when the government declared its plans to upgrade the QAIA. The year 2007 was a turning point in the development of the aviation sector when the Ministry MoT adopted the government's vision and translated its aspiration into a three-year national agenda that sets the overall framework for the air transport sector's development. Amongst the major decisions are those related to the restructuring of the institutional framework of the civil aviation sector through issuing the civil aviation law and the establishment of the CARC in 2007. Other important steps include opening the market for private sector investment at civil airports and pursuing a liberal air transport policy through signing the Jordan—EU comprehensive agreement in 2010. Figure 31 depicts a timeline for Jordan's major reforms in the aviation sector.

Figure 31: Jordan's aviation developments timeline



2005	2006	2007	2009	2010	2013
Jordan Civil Aviation Regulations (JCAR) transformed from FAA to EU standards	Privatization of Queen Noor Civil Aviation Technical College (QNCATC)	• New Aviation Law no. 41 • Establishment of Civil Aviation Regulatory Commission (CARC) • Private company AIG to build and operate new terminal Queen Alia Intl Airport • Gradual liberalisation of air services (31 open skies ASAs) • Royal Jordanian partial privatization	Establishment of Jordan Airports Company (JAC)	Jordan-EU comprehensive agreement	Inauguration of new terminal at Queen Alia Int'l Airport.

Source: (Gokgur and Christen, 2009)

Looking into the situational analysis of the air transport sector in Jordan, strengths and opportunities that help to attain the policy objectives are identified, as well as the weaknesses and threats which present obstacles against reaching the desired policy objectives (Table 12). It is worth mentioning that threats in many cases are considered as vulnerabilities that will be incorporated into the policy contingency elements in the coming phase of the policy development process.

Table 12: SWOT analysis of the air transport sector in Jordan

Strengths
• Best-in-class aviation policy (Autonomous regulator / Semi-liberal policy / PSP in the management of airports). • Steady growth in international scheduled traffic (9% CAGR for 2009 to 2013). • New international standard airport (QAIA) with future expansion plans to cater for 12 million passengers to be completed in 2017. • Gradual liberalisation of air services (31 open skies agreements and EU-Jordan aviation comprehensive agreement in 2010). • Advanced aviation law No. 41/2007 and separation of regulatory and operational entities. • Gradual approaches towards deregulations through the commercialisation of civil airports (in 2007, ADPi won a 25 year contract to undertake the expansion project, operation and management of QAIA). • Network adjustments and fleet expansion plans for home carrier RJ.
Weaknesses
• High competition with Gulf air carriers and Gulf airport hubs (Alafi, 2014). • Limited number of Jordanian air carriers (One FSNC and less than five charter /commuter carriers). • Limited seat capacity of scheduled services to Europe and South East Asia (20% of total international capacity) (CAPA, 2015). • High seat capacity concentration in intraregional markets (76% of total international capacity) with limited growth of Middle Eastern travel market (CAPA, 2015). • Suppressed benefits of the Jordan-EU comprehensive open skies agreement (EUROMED, 2012). • Airport development and expansion plans are focused on QAIA and no future plans for the other two airports in Jordan.
Opportunities
• Strategic geographic location in the Middle East with links to Africa, Asia and Europe. • Growing tourism sector due to richness in cultural attractions and proximity to main tourism markets in Europe. • Progress in the education and training sector and high education level of population (increased three points in the “Higher education and training” score in WEF-GCR from 2009 to 2014). • High quality of medical tourism services and advancements in the health sector (increased five points in the “Quality of health services” score in WEF-GCR from 2009 to 2014). • Advancements in the financial market and fiscal reforms which promoted productivity and goods’ market efficiency.
Threats
• Highly volatile political and security environment in the Middle East and neighbouring countries to Jordan. • Limited natural resources (water, agriculture and energy are subsidized (SHarp, 2012). • Restrictive international policies and regulatory barriers to foreign direct investments. • High inflation rates (5.6% increase in average consumer prices for 2013/2012) (IMF, 2014) • Social challenges due to increasing inflow of refugees from nearby conflict countries. • High youth unemployment rate (almost 30%) (USAID, 2012).

Source: Compiled by the author

- Performance benchmarking analysis

In this step, Jordan's efficiency utilisation of national macro-environment factors to produce aviation sector output is benchmarked against other countries. Additionally, reference countries are identified and the best-fit aviation policy scheme is proposed for a more efficient use of national competitiveness factors.

The DEA output oriented model explained in Chapter four, resulted in 23 efficient countries out of 52. These countries form the set of efficient frontiers representing the best practice of the sector (benchmark). Among the 52 countries included in the performance benchmarking sample, Jordan occupies the 34th rank in terms of national competitiveness for the year 2009 (WEF, 2009a). Lately, the country has been considerably affected by the global financial and economic crisis in addition to the rise of the "revolutionary movement" in the Middle East region. GDP growth slowed down to 2.3% annually in 2010 and has not returned to pre-crisis levels since (GDP growth was 8.2% in 2007). As a result, Jordan lost 10 positions as per the competitiveness report of 2014 and it occupied rank 44 (WEF, 2014). The drop mainly reflects the country's macroeconomic challenges and its inability to boost growth over the longer term to levels that would result in sustainable economic resilience. Moreover, the political and security unrest in the Middle East generally and in Syria specifically is diminishing the prospects for stability and growth in the region (World Bank, 2014c).

The DEA efficiency analysis shows that Jordan's efficiency score is 0.41, implying that Jordan is performing at less than 50% capacity and that the country can produce 59% more output given the same level of input[x]. Moreover, the performance benchmarking analysis resulted in *identifying a relatively efficient peers' group* for Jordan, including the following countries: Iceland, Malta, UAE and USA (Table 13). Jordan can learn from its peer efficient

[x] The CU scores range from zero to one, with one being efficient full capacity utilisation (i.e. 100% of capacity). Values less than one indicate that the country is operating at less than full capacity, given the set of fixed inputs (less efficient).

countries and utilise their given input efficiency to maximise the benefits of the air transport sector by producing up to 59% more capacity output. It is worth mentioning that the USA and UAE showed the highest two operational frequencies of 29 and 19 respectively. That means that USA and UAE capacity utilisation models are being used the most as a benchmark reference by other, less efficient, countries in an attempt to reach higher efficiency scores.

Table 13: Relative efficiency scores and full capacity output for Jordan and its peer countries

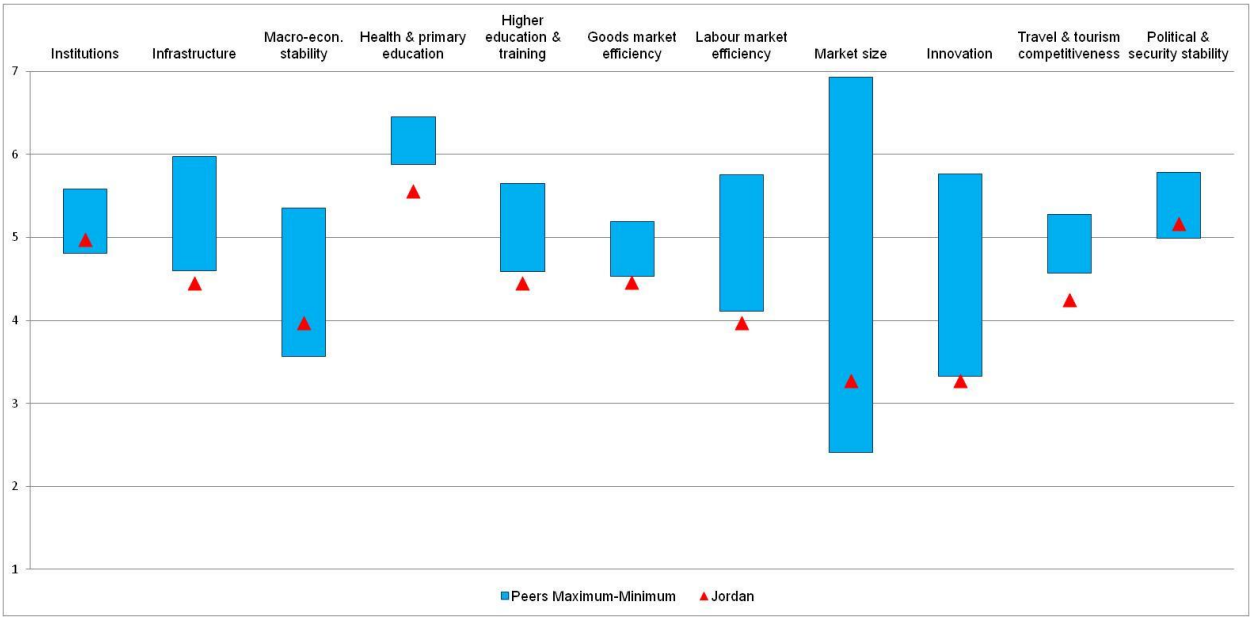
Country	Observed outputs				Efficiency Score	Full capacity output			
	(O_1) Total passengers	(O_2) Contribution to GDP	(O_3) Contribution to employment	(O_4) Air connectivity index		(O_1) Total passengers	(O_2) Contribution to GDP	(O_3) Contribution to employment	(O_4) Air connectivity index
Iceland	1,837,165	12.9	12.3	3.87	1	1,837,165	12.9	12.3	3.87
Malta	2,918,676	18.0	19.7	6.07	1	2,918,676	18.0	19.7	6.07
U A E	40,901,752	14.7	13.8	4.77	1	40,901,752	14.7	13.8	4.77
U S A	964,402,413	4.9	6.8	22.78	1	964,402,413	4.9	6.8	22.78
Jordan	4,770,769	5.3	4.6	4.44	0.41	11,636,022	12.9	11.2	10.83

Further, the country-level information provides guidance as to which countries exploiting their factors of national competitiveness may be in most need of capacity management measures. Such discrimination between the best performers and the under performers could highlight for policymakers and regulators the areas that need improvement. This will assist in the coordination and contribution of the country's national factors of competitiveness into producing an optimal air transport sector output which is represented here by number of passengers, aviation contribution to GDP and aviation contribution to employment.

It is evident that all the output-efficient countries, including Jordan's peers, are innovation-driven economies. That means those countries are more dependent on efficiency and innovation enhancers than on their factor endowments to improve their competitiveness. In other words, countries in a more advanced stage of development tend to utilise given factors of national competitiveness in a more efficient way to maximise air transport output (Itani et al., 2015). As for Jordan's peer countries and at the input level, Iceland is utilising its political and

security stability factor to maximise output, while USA's well-structured institutional framework serves as the basic factor for the country's efficient performance. Malta's tourism dependent economy has led to high results concerning the aviation contribution to GDP and employment, and pushed Malta into the first rank among the studied 52 countries when it comes to the percentage of contribution of aviation to GDP and employment.

Figure 32: Eleven pillars of national competitiveness: benchmarking Jordan's performance with peer countries



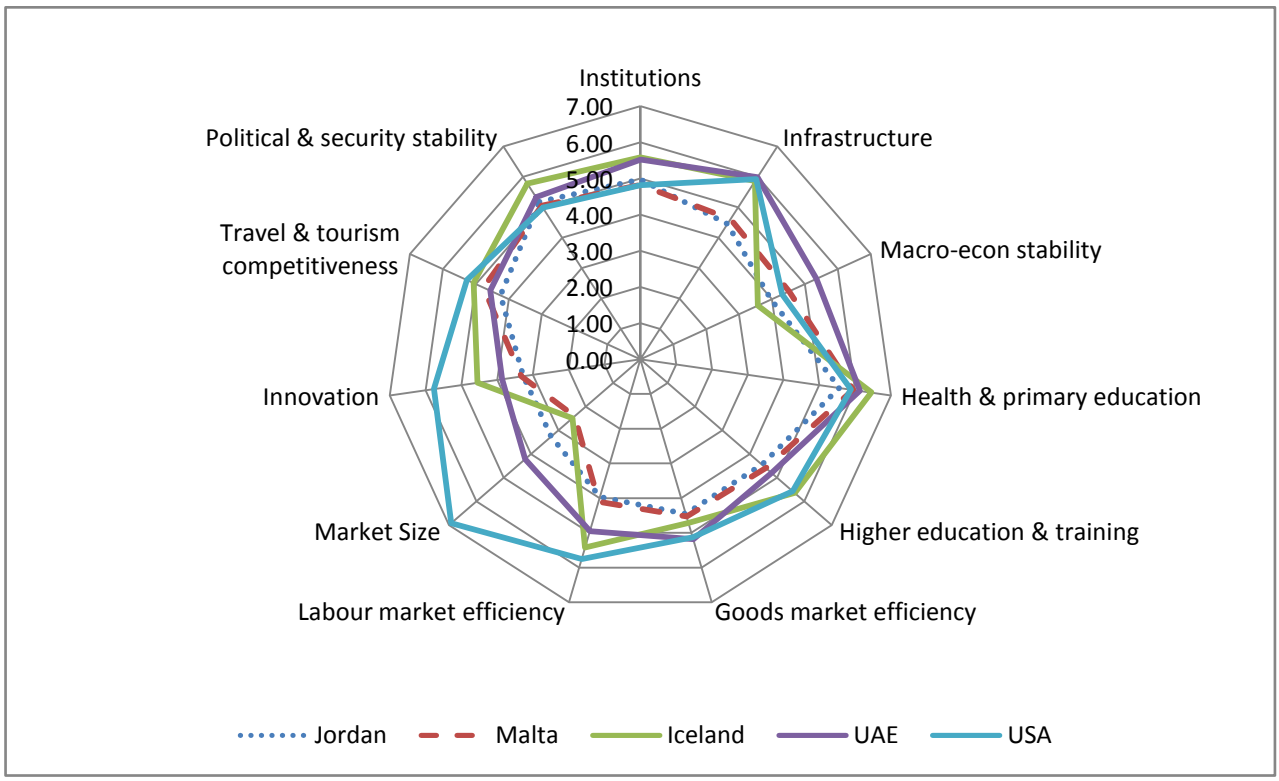
Source: (WEF, 2009a)

This indicates that efficient peer countries utilise given inputs in a different manner from less efficient ones, such as Jordan. Even the weight distribution among different factors of national competitiveness shows a dissimilarity of dependency to maximise capacity output between well performing and underperforming countries. As a result, Jordan needs to enhance its capacity outputs through utilising its most contributing inputs such as the institutions, macro-environment and market size. This is contrary to the best performing industry benchmarks which are dependent on factors such as infrastructure, health system, labour market efficiency, business innovation and travel and tourism competitiveness to produce maximum capacity output of air transport

system (Figure 32). However, both Jordan and its peers are relying on two common factors which are macro-economic and political and security stability to achieve maximum capacity output.

The analysis proceeds with the identification of a best-fit aviation policy scheme. The aviation policy decisions of Jordan's peers are presented in Table 14. As mentioned, the four peer countries are utilising their national competitiveness factors at full capacity and thus producing an efficient output. However, each country is following a different approach in realizing the benefits of its aviation policy. Nevertheless, the adopted policies by the efficient peers are classified as being the best-in-class aviation strategies (Itani et al., 2015). Since Jordan is from a different stage of development (efficiency driven economy) compared to its peers (innovation driven economies) it is necessary to identify its most similar counterpart, so that the comparative analysis for recognizing the best-fit aviation policy for Jordan is based on the most similar peer or reference benchmark.

Figure 33: National competitiveness factors for Jordan and its peer countries



Source: (WEF, 2009a; IEP, 2009)

To *identify the most similar peer country*, a closer look into the scores of the macro-environment factors of the USA, UAE, Iceland and Malta in comparison to Jordan shows that Malta is the nearest match to Jordan in terms of the total score of the national competitiveness and the index levels of the macro-environment factors (Figure 33). Additionally, both Malta and Jordan are following the same aviation policy scenario which is an autonomous civil aviation regulator, a semi-liberal air transport policy and PSP in the management of hub airports. However, Jordan is still unable to exploit the full benefits from its policy to produce efficient aviation output results (Table 14). Jordan faces a number of daunting challenges as it strives to address its development and reform priorities. These social challenges include a rapidly growing population, high unemployment rates, weak citizen participation in governance and politics, water scarcity, reliance on expensive imported energy, gender disparities, and an influx of Syrian refugees (USAID, 2012).

Table 14: Aviation policy in relation to percentage of capacity utilisation of national competitiveness levels of Jordan and its peer countries

	Aviation policy pillars			Competitiveness score	Capacity utilisation
	Autonomous aviation regulator	Liberalisation of air services	Commercialization of airports		
USA				5.59	100%
UAE				4.92	100%
Iceland				4.80	100%
Malta				4.30	100%
Jordan				4.30	41%

Source: Author;(WEF, 2009a)

Although Jordan and Malta have a very similar profile when it comes to national competitiveness, Jordan is less efficient than Malta. Much of this underutilisation

of capacity has risen out of using the inputs inefficiently rather than not using enough variable inputs. If the inputs had been used efficiently, then the efficiency scores for the underperforming countries would have been greater.

After completing the situational analysis and the performance benchmarking analysis of the aviation sector in Jordan, necessary information is now in place to move to the second phase which is assembling the basic policy.

5.2.2 Assembling the basic policy

In this second stage of the aviation policy development framework, the policy objectives are stated, conditions of success are identified and policy actions are specified.

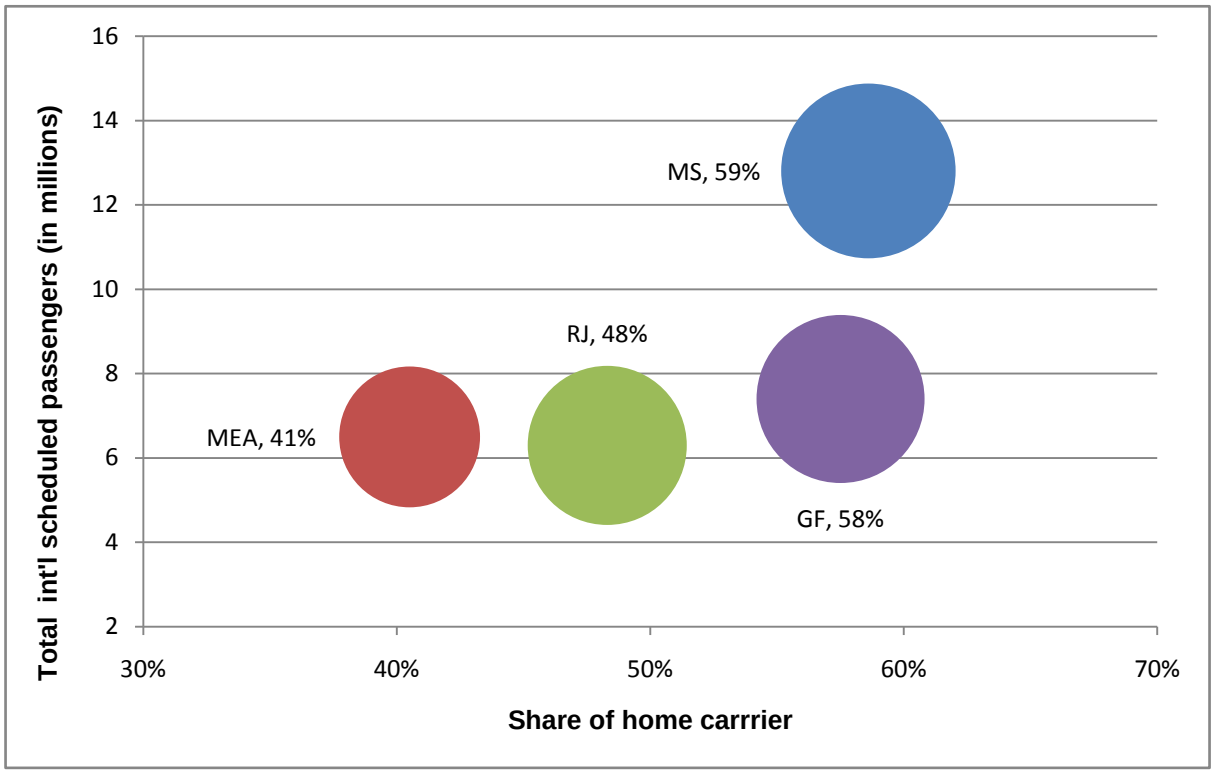
The *policy objectives* can be stated generally as promoting the sustainable development of aviation so as to increase connectivity and to derive as many economic benefits for Jordan as possible. *Conditions of Success* with regard to this objective are determined through the following: the appropriate regulatory requirements to meet the European Aviation Safety Association (EASA) standards for effective implementation of the Jordan-EU comprehensive open skies agreement; QAIA—the main airport in the country to continue operating as a hub airport driving the growth of air traffic; the expansion of Jordanian based air carriers; and the improvements in the macro-environment factors impacting on the efficiency of the aviation sector output.

The CARC should introduce the necessary reforms to adhere to ICAO's SARPs and to the European standards and build its internal capacity based on the transfer of technical knowledge and training projects. This requires the harmonization of the regulatory framework to enable a better inter-operability between Jordan and EU states. Regulatory harmonization includes different areas such as safety, security, environment, competition, consumer protection and air traffic management.

As QAIA is intended to guide the growth of civil aviation in Jordan, success in this step can be measured by the percentage of total market share in the

passenger market of QAIA's home carrier—RJ, compared to home carriers of other competitive airports in the region, such as Beirut International Airport, Bahrain International Airport and Cairo International Airport (Figure 34). Success in meeting the main airport development objective also requires that the airport's expansion plans carry on and that RJ continues to operate from QAIA as one of the successful Middle Eastern airlines in addition to certifying new air carriers for passenger and cargo transport.

Figure 34: Home carriers' share of total international available seats in respective hub airports



Source: (ICAODATA, 2014b)(CAPA, 2014a)

With regard to the improvements in the macro-environment factors, Jordan is well positioned to address the challenges facing the country due to several opportunities. According to the efficiency benchmarking results, there is significant room for improvement to boost the macro-environment to higher levels of contribution in the output of the aviation sector. Jordan could benefit from encouraging more privately-led growth in the Jordanian infrastructure and

supporting development plans in the fields of health and education. Boosting labour market efficiency and the full potential of innovation for improving productivity has not yet been taken advantage of (WEF, 2014). Jordan could also exploit more of its tourism assets and natural resources that would increase the economic benefits of travel and tourism and advance its contribution to GDP similar to other tourism-dependent economies in the Middle East region (Table 15).

Table 15: Travel and Tourism percentage contribution of the whole economy's GDP

Travel & Tourism's Direct Contribution to GDP		2013 % share
13	Malta	13.6
31	Tunisia	7.3
33	Lebanon	6.9
34	Cyprus	6.8
36	Greece	6.5
47	Egypt	5.6
51	**Jordan**	5.3
64	Turkey	4.6
66	Syria	4.5
	World	2.9
	Middle East	2.5

Source: (WTTC, 2014)

The policy actions that are needed for achieving the policy objectives should include the activities falling under the main aviation strategy pillars which are the regulatory framework, the liberalisation of air services and the commercialisation of civil airports (Table 16). Under the regulatory part and after the transformation of Jordan aviation regulations into European standards in 2005 followed by the successful establishment of the CARC in 2007, focus should be directed towards harmonizing Jordan's legislation with European standards and implementing EU aviation rules in areas such as aviation safety,

security, environment, consumer protection, air traffic management, competition issues and social aspects. This should open new markets and integrate Jordan into a Common Aviation Area with the EU. Moreover, attention should be given to the challenges of the convergence into the new regulations in terms of implementation procedures and capacity building requirements.

For the liberalisation of air services, Jordan is not yet able to seize the benefits of Jordan-EU open skies agreement growth after the agreement was signed in December 2010. This agreement enables all EU airlines to operate direct flights to Jordan from anywhere in the EU and vice versa for Jordanian carriers. Cross-investments between Jordan and Europe are encouraged allowing any EU carriers to set up a subsidiary in Jordan and vice versa. This removes all restrictions on prices, routes and quotas of flights between Jordan and the EU. Additionally, RJ should enhance its access to slots at hub European airports. Amman QAIA has no shortage of slots but RJ cannot get the right and/or sufficient slots at Paris Charles De Gaulle, London Heathrow and Frankfurt International Airport (CAPA, 2012b). Moreover, RJ is encouraged to make network adjustments and fleet renewals to overcome the negative impacts of the instability in the region which has hit its main markets such as Egypt, Libya, Syria and Lebanon.

On the commercialisation side of airports, encouraging the investment opportunities in Jordan's civil airports will help in advancing the quality of services provided, thus yielding more income to both investors and airport authorities and boosting tourist inflows. Also, facilitating the business of a private investor to establish cargo services at Aqaba international airport will enhance the strategic connectivity of the airport, as Aqaba is an important industrial centre and a growing tourist destination.

Table 16: Examples of policy action recommendations for Jordan's aviation sector

Regulatory • Define the governing factors in the development of regulations and allocate the necessary financial and human resources to carry out the regulatory harmonization project with ICAO SARPs and EASA in areas of aviation safety, environment and consumer protection, passenger rights, air traffic management, economic regulation, competition issues and social aspects.
Liberalisation of air services • Licensing for new air carriers to promote intraregional connectivity. • Help advance the commercial prospects of Jordanian aviation companies operating non-scheduled air transport services. • Create incentives for regional and European LCCs to launch scheduled air services to Jordan. • Improve the traffic rights and slot allocations for RJ and other Jordanian carriers at Europe's hub airports. • Network adjustments and fleet renewal for RJ.
Commercialisation of airports • Create new investment opportunities for the private sector to invest in Jordanian civil airports. • Invite the private sector to invest in air cargo capacity building and developing air cargo services at Aqaba International Airport. • Encourage investments in small airports and heliports to promote connectivity to relatively remote locations from Amman yet attractive tourist hubs, such as: Petra, Wadi Rum and Jerash.

5.2.3 Specifying contingency elements

The last phase of the aviation policy development framework discusses the contingency elements of policy actions. Specifying vulnerabilities become important as they highlight possible threats to the policy actions. Additionally, signposts provide information about the forecasted progress of the policy

towards its objectives through monitoring the availability of the conditions necessary for success. Based on the nature of the signposts, policymakers will either take a defensive action to assist in sustaining the necessary conditions for success or a corrective action which might include adjustments in certain pieces of the policy in order to improve the chances of its success.

In the case of Jordan, the main factor which makes the policy vulnerable is the highly volatile security situation in the Middle East. The persistence of the conflict in the region has significantly impacted on the travel market and has led to the suspension of opening new routes and licensing for new carriers[y]. This makes the future of the home carrier, RJ, uncertain since the conflict has impacted on its biggest markets and forced it towards capacity reduction decisions. Additionally, RJ which accounts for almost 50% of the available international seat capacity in QAIA, has witnessed a drop in yields and revenues since 2011. This makes it more difficult for RJ to lead positive traffic growth in the country.

The second vulnerability is due to the characteristics of the Jordanian economy which is an "efficiency-driven" economy. At this stage of development, national competitiveness is increasingly driven by higher education and training, efficient goods markets and a well-functioning labour market. The performance benchmarking analysis indicates that Jordan falls behind its peer(s) when it comes to the mentioned three variables. However, 2014 competitiveness figures for Jordan show a slight progress in the quality of higher education. Moreover, the recent fiscal reforms have boosted the goods market efficiency, but the unemployment rate among the youth is considerably higher and is presenting diverse negative impacts on the economy of Jordan. The fluctuations in the competitiveness levels of these indicators, which are key drivers for Jordan's competitiveness as an efficiency-driven economy, are hampering the relative efficiency performance of the air transport sector in the country.

[y] Air Arabia Jordan talks have been suspended since 2011.

Identifying the policy adaptation *signposts* is relevant at this point since it allows the people in charge of the policy implementation to decide on the appropriate action to tackle the prevailing condition(s). The outputs of the air transport sector and the conditions necessary for success are a good example of signposts that should be observed in order to assist the policy to reach its objectives. In the case of Jordan, policymakers should keep an eye on the following indicators:

- Levels of scheduled passenger traffic and cargo;
- Share of air transport sector contribution to economy through direct financial returns or through creating employment opportunities;
- Air connectivity levels;
- Progress of the country's competitiveness levels;
- Regulatory compliance with international standards.

The response to any signpost not performing as planned will trigger an action that may be classified as either defensive or corrective action. Examples of *defensive actions* that the Jordan policymakers may pursue are: promoting the policy through community and public discussions; stressing the economic and social benefits of expansion plans; undertaking additional investments in the macro-environment supporting factors, such as: international trade, goods efficiency, and travel and tourism infrastructure. All of these mentioned actions remain defensive as long as no changes have been made to the basic policy objectives.

On the other hand, *corrective actions* include adjustments in policy in response to alarming signposts. The objective is to remedy pieces of the existing policy actions in order to improve the chances of the policy success. This might include redefining the necessary conditions for success. Examples of corrective actions include: scaling back expansion plans; creating new demand-shaping policies; embarking on organizational restructuring projects; and taking cost-efficiency measures. Elements of the aviation policy as applied in Jordan's case are illustrated in Table 17.

Table 17: Elements of the aviation policy as illustrated through Jordan's example

Setting the stage	
- Current aviation policy	Scenario 14
- External and internal analysis	SWOT analysis (Table 12)
- Identify relatively efficient peers	Iceland, Malta, UAE, USA
- Identify the most similar peer country	Malta
Assembling basic policy	
- Policy objectives	Promoting the sustainable development of aviation so as to increase connectivity and to derive as many economic benefits for Jordan as possible
- Conditions of success	• Regulatory requirements to meet EASA standards for effective implementation of the Jordan-EU comprehensive open skies agreement; • QAIA—the main airport in the country to continue operating as a hub airport driving the growth of air traffic; • The expansion of Jordanian based air carriers; and • An improvement to the macro-environment factors impacting the efficiency of the aviation sector's output.
- Policy actions	Table 16
Specifying contingency elements	
- Vulnerabilities	• Highly volatile security situation in the Middle East. • Efficiency driven economy relying on factors identified as weak through Jordan's competitiveness analysis.
- Signposts	• Levels of scheduled passenger traffic and cargo; • The share of air transport sector contribution to economy through direct financial returns or through creating employment opportunities; • Air connectivity levels; the progress of the country's competitiveness levels; • Regulatory compliance with international standards.
- Defensive actions	• Promoting the policy in public and community forums; • Stressing the economic and social benefits of expansion plans; • Undertaking additional investments in macro-environment supporting factors such as: international trade, goods efficiency and travel and tourism infrastructure.
- Corrective actions	• Scaling back expansion plans; • Creating new demand-shaping policies; • Embarking on organizational restructuring projects; • Taking cost-efficiency measures.

Source: Author

Under some circumstances and during the implementation phase, neither defensive nor corrective actions will be helpful. For example, there may be a major change in the objective of the stakeholders, an extremely large shock to the signpost information (for example sudden collapse in demand or an eruption of war), or significant unforeseen action by others (for example a huge airport capacity expansion project in Syria or Lebanon; or the EU suspending the Jordan-EU open skies agreement). In such cases, the policy should be restudied in its entirety. This means restarting the policy process. But this does not mean that the process would be started from scratch because the policy development framework serves many benefits. Firstly, much information will be available for policymakers about the environment, constraints, motivations, strengths and capabilities of the national aviation system and the involved stakeholders. Secondly, many parts of the policy will already be in place and, to some extent, irrevocable since the policy is developed on the basis of benchmarking a better performing peer. Moreover, the effects of the initial policies will be recognized. Finally, the participants will have obligations and responsibilities to the whole process.

After this point and forward, the implementation phase will start.

Conclusion

The aviation policy making framework presented in this chapter is intended to help policymakers devise strategies based on national competitiveness on the one hand and peers' best practices on the other. The framework serves as a strategic planning tool which is both systematic and flexible. It follows a three phased process starting with setting the appropriate planning background then continues to assembling the policy element, and ends with contingency planning. An integral part of the framework is the identification of efficient peer countries that serve as a reference for the selection of the best-fit policy. Yet the planning framework is flexible because it allows the policymakers to defend, correct and re-examine the policy actions based on a forward thinking approach which incorporates the contingency elements of the policy and tracks the

developments that can affect the odds of success of the selected policy actions. The suggested aviation policy development framework provides a means of integrating different elements of strategic planning in a comprehensive and coherent manner.

The application of the framework to Jordan's experience in aviation policy development revealed the following:

- The aviation policy decisions of Jordan are in line with international best practices and the country's aviation strategy scenario is one of the best-in-class aviation strategies.
- Jordan faces a number of external threats and industry weaknesses that affect the relative efficiency of its air transport output (Jordan can produce 59% more output, given the same level of input).
- The aviation development project was funded by an external agency. The recruited consultants relied more on international industry trends and success stories to devise their recommendations for Jordan's aviation policy decisions. No strategic analysis was performed and little consideration was given to the country's national capacity to compete and its stage of economic development: the two factors that were demonstrated through the DEA and truncated regression to impact on the air transport sector's output and levels of efficiency.
- The peer country performance benchmarking analysis reveals an opportunity for Jordan to improve its level of air transport output through developing efficiency enhancing macro-environment variables, namely: higher education and training, goods markets and labour market.
- The restructuring and deregulation decisions in order to be effective, should be supported by policy actions based on strategic and contingency planning elements to allow for flexibility in policy development to tackle uncertainties; especially in the case of Jordan where the level of uncertainty is high due to the volatility of the security situation in the Middle East region.

- Identifying and maintaining the conditions of success to sustain the benefits of the best-in-class aviation strategies should be established on the basis of Jordan’s national resources and its stage of development. This will help the country capitalize on its internal competitiveness factors and sustain the success of the policy results.

The above findings reiterate the importance of the availability of a structured aviation policy development framework that encompasses strategic planning elements and is designed on the basis of the national capacity of the country to develop and sustain the productivity of its air transport sector.

6 CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS

Driven by globalization, technological revolution, economic and demographic challenges, strategic management has found its way into public sector organizations to provide a clearer direction amidst an environment of uncertainty. However, in an ever-changing industry such as the aviation industry, these outside forces often form the basis for this uncertainty. In more developed countries, the maturity of the institutional framework and developments in macro-environment factors have had their positive impacts on the rule making procedures including policy planning and development in civil aviation, whereas in the less developed countries (LDCs) the regulatory systems have simply not kept pace with the aviation sector's growth. Problems are likely to occur when the advanced model of regulatory governance is put into use in dissimilar economic and institutional environments in LDCs, where human resource limitations and institutional capacity constraints imply that a "one size fits all" approach to regulatory governance is unlikely to result in the anticipated economic outcomes. Besides, the lack of funds in most of the developing countries pushes governments to seek international banks and bilateral aid agencies to fund their aviation-related projects which means most of the sector's development plans are under the influence of political pressures and the interests of investors and the fund donors.

In addition to the above described status of the aviation regulatory systems in developing countries, there is a considerable shortage of detailed research in the area of devising state-level aviation strategies. This study addresses these concerns through supporting the argument that an aviation strategic planning framework helps aviation policymakers in developing countries achieve high strategic performance, develop a clear understanding of the industry's competitive dynamics, assess the country's national ability to compete, and identify responses to tackle uncertainty.

This chapter discusses the extent to which the study achieved its intended objectives. It also presents the contributions the study makes to a better understanding of the benefits of strategic planning approaches to state-level aviation strategies in developing countries. This work focuses on the structure and process of civil aviation strategic planning. The key findings relating to the research aim and objectives are explained. Additionally, the importance of this research and its theoretical and practical benefits are examined. The final part of the chapter considers some limitations of the research and discusses areas for potential further investigation.

6.1 Summary of findings

This research aimed to design a policy development framework for civil aviation strategic planning in developing countries, based on national competitiveness capacity and international best practices. The study uses a combined inductive and deductive research approach to devise an aviation policy making framework based on conventional strategic planning concepts. Additionally, qualitative and quantitative analytical methods are utilised to capture the findings. These methods range from literature reviews to questionnaires and statistical models such as Structural Equation Modeling (SEM), Data Envelopment Analysis (DEA) and truncated regression. The next section will provide more explanation on how the research findings have supported each of the four objectives to achieve the aim of the study.

Objective 1: *to explore current practices in devising aviation strategic plans in most countries of the developing world.*

The reviewed literature in terms of the evolution of strategic planning schools of thought and the use of strategy concepts in aviation policy development, has led to the following findings.

Key findings:

1.1 The fundamental conversion of strategic planning application from the private to the public sector shows the progression of strategic planning

towards becoming a management tool in government agencies in the developed countries. Over the last decade an increasing number of public agencies have commenced strategic planning practices. Moreover, major international consultancy companies have helped public institutions build and execute strategies to achieve their policy and organizational goals.

1.2 The reviewed literature in terms of the structure and approach of aviation planning shows that there exists no predefined framework for formulating civil aviation strategies, and countries use different approaches to draft their civil aviation master plan.

1.3 Aviation policy planning in the less developed world is mostly steered by the interests of the fund donors, that include development banks or bilateral aid programmes, and is influenced by local political pressures.

1.4 In many cases, aviation planning in the less developed world represents partial studies and attempts to find solutions to specific situations rather than being a comprehensive aviation plan based on objective setting and decision making. Examples of partial planning are the studies conducted for the purpose of equipment procurement, runway construction, navigation systems upgrade and others.

1.5 The country's national priorities, levels of competitiveness and stage of development are often overlooked while devising long-term, state level strategies.

Objective 2: *to identify the macro-environment factors that impact on the air transport output at a national level.*

The concept of economic competitiveness affirms that the national environment in which industries operate can enhance or hinder their ability to compete nationally and internationally. This hypothesis is tested on the aviation industry context where 17 socio-economic variables are analysed against four outputs of the aviation sector which are: total passenger numbers, air connectivity levels,

aviation contribution to GDP and employment. The 17 input variables ranged from the traditional means of production, such as labour market, financial market, and population count, to neoclassical economists' emphasis on investment in physical capital and infrastructure and, more recently, to interest in other pillars of competitiveness, such as education and training, technological progress, macroeconomic stability, good governance, the rule of law, transparent and well-functioning institutions, corporate sophistication, demand conditions, market size, and political and security stability. Structural Equation Modelling (SEM) is used to identify the relation between the national competitiveness levels and aviation output levels. The sample included 52 countries at different stages of development.

Key findings:

2.1 The results of the SEM show that there exists a dependency between the selected macro-environment indicators and air transport output. Twelve input variables showed high significance (average p-value < 0.05). These variables are the following: political and security stability, goods market efficiency, innovation, health and primary education, country surface area, higher education and training, market size, travel and tourism competitiveness, infrastructure, macro-economic stability, labour market efficiency, and institutions.

2.3 The 12 significant inputs are related to the four outputs differently; however, five inputs: political and security stability, goods market efficiency, innovation, market size, and institutions share the same impact of <0.001 with two common variables: aviation contribution to GDP and aviation contribution to employment, while political and security stability is said to be the factor with the highest significance value at 0.004, followed by goods market efficiency at 0.006. However, the two least significant factors are the economic stage of development at 0.567 and financial market development at 0.518.

2.4 The country surface area, infrastructure, and travel and tourism competitiveness, are said to be the most significant inputs in relation to air connectivity levels. The latter measure the level of connectivity of a country in the global air transport network based on the degree of liberalisation of air transport markets, and the extent to which the country is participating in international production networks.

2.5 Indicators namely: economic stage of development, technological readiness, population count and the level of business sophistication, displayed high significance with one common output, which is passenger numbers. That means countries in a more advanced economic stage tend to attract more air passenger traffic. Moreover, the quality of a country's overall business networks as well as the quality of individual firms' operations and strategies is shown to have a positive relation with passenger numbers.

2.6 The identified significant drivers create an enabling environment that determines the capacity of an economy and society to benefit from the air transport system's productivity.

Objective 3: to demonstrate world's best-in-class aviation policy scenarios.

A performance benchmarking technique—Data Envelopment Analysis (DEA) is applied to the sample of 52 countries to identify the countries that are better utilising their macro-environment factors to produce higher levels of air transport output. The key findings of this part of the analysis are presented below.

Key findings:

3.1 The DEA output oriented model resulted in 23 better performing countries. These countries are at various levels of development and form the set of efficient frontiers[z] representing the best practices of the

[z] Efficient frontier is defined as a set of optimum performing countries that offers the highest expected output for a defined level of input. Countries that lie below the efficient frontier are sub-optimal, because they do not provide enough output for the similar defined level of input.

aviation sector in terms of their utilisation of inputs to produce aviation output.

3.2 The efficiency scores of the whole sample vary between 14%-100% implying that least performing countries such as Peru, Nigeria and Brazil, can learn from other efficient peer countries and utilise their given input efficiently to maximise the benefits of the air transport sector by producing up to 86% more capacity output.

3.3 It is evident that all the better performing countries are at efficiency-driven stages and innovation-driven stages of development. That means those countries need to sustain the competitiveness of the factors critical for their efficient performance in the air transport sector. In other words the better performing countries need to sustain their ability to produce the right mix of products and services respective to their supply-and-demand conditions (goods market efficiency). Additionally, those countries need to strengthen the quality and quantity of higher education systems and training through examining expenditure on higher education, quality of management schools, Internet access in schools and universities, and the availability of research and training institutions (higher education and training). Finally, the better performing states need to develop the potential of markets in terms of domestic market size and foreign market size (market size) and support innovation in terms of quality of scientific research institutions, company spending on R&D, university-industry collaboration in R&D, utility patents and intellectual property protection (innovation).

3.4 The weight distribution among different factors of national competitiveness shows a dissimilarity of dependency to maximise efficiency levels between well performing and underperforming countries. Under-performers are depending mainly on inputs such as the education system, goods market and market size contrary to the best performing industry benchmarks (i.e. efficient countries) which are depending on

factors such as institutions, infrastructure, health system, labour market efficiency, business innovation and travel and tourism competitiveness to produce maximum capacity output of the air transport system.

A questionnaire was distributed to civil aviation executives of 113 countries to survey the approaches of the participating countries to the three main components of the national aviation policy, namely: (1) institutional governance of the aviation administration; (2) liberalisation of air services; and (3) ownership and management model of hub airports.

3.5 Eighteen theoretical civil aviation strategy scenarios are derived from the above mentioned three main components of the aviation policy. Each scenario represents an exclusive combination of three civil aviation strategy pillars as follows:

Scenario Number	Availability of civil aviation autonomous regulator	Degree of air service liberalisation	Airport ownership model
18	Yes	Full	PSP in ownership
17	Yes	Full	PSP in management
16	Yes	Full	No PSP
15	Yes	Semi	PSP in ownership
14	Yes	Semi	PSP in management
13	Yes	Semi	No PSP
12	Yes	Restricted	PSP in ownership
11	Yes	Restricted	PSP in management
10	Yes	Restricted	No PSP
9	No	Full	PSP in ownership
8	No	Full	PSP in management
7	No	Full	No PSP
6	No	Semi	PSP in ownership
5	No	Semi	PSP in management
4	No	Semi	No PSP
3	No	Restricted	PSP in ownership
2	No	Restricted	PSP in management
1	No	Restricted	No PSP
	Best-in-class scenario		Not followed scenario

3.6 The survey results covering 113 countries show that there exist four scenarios which are not applicable in reality and that no country is following any of scenarios 2, 3, 9 and 12 since they consist of contradicting approaches toward the main components aviation policy. For example scenario 3 suggests that a country's civil aviation administration has no independency in regulating the air transport industry, and is pursuing a restricted policy towards the liberalisation of air services. However this same country allows private sector ownership of air transport infrastructure which was originally owned by the government under such non-liberal operating conditions. The before-mentioned situation is most likely to be far from being practical. A civil aviation administration with an underdeveloped capacity of institutions, regulations, oversight capabilities and restricted liberalisation policies will discourage private investors from acquiring stakes at a government owned aviation infrastructure.

3.7 It is found that scenario 14 (which represents the availability of an autonomous civil aviation regulator, a semi-liberal approach towards the provision of air services and private sector participation on airport management and operation levels) is the most adopted scenario, where 25% of the surveyed countries are pursuing the same stance towards the main civil aviation strategy pillars.

3.8 Eliminating the scenarios which do not conform to international obligations, standards and recommended practices, and development trends in aviation systems, result in six aviation strategy scenarios namely scenarios 13 to 18.

3.9 It is demonstrated through the DEA results that all 23 better-performing countries are following at least one among the six best-in-class aviation strategies. No country among the better performers is adopting a policy approach different from the aviation strategy scenarios 13 to 18.

Objective 4: *to relate aviation policy decisions to the air transport sector's efficiency levels through a two-stage performance benchmarking process.*

The relation between aviation policy elements and levels of performance efficiency is tested through using truncated regression to examine the hypothesis that the efficiency of a country's air transport sector is determined by different contextual variables. Four exogenous variables: the country's stage of development *(DEV)*, the level of liberalisation of air services *(LEB)* and two dummies *(PUB)* and *(MGT)* denotes the form of private sector participation in main/hub airports in the country where (PUB) refers to publically owned and operated airports and (MGT) refers to airports which are managed by private sectors or under management contracts. The key findings of the truncated regression are listed below:

Key findings:

4.1 All the parameters are statistically significant. It is observed that efficiency increases as the stage of development increases. In other words, countries in more advanced stages of economic development tend to have a more efficient aviation sector than countries in earlier stages.

4.2 The level of liberalisation of air services is negatively related to inefficiency. This implies that countries pursuing more restricted air liberalisation approaches tend to be producing less air transport output than peer countries with similar competitiveness levels and a more liberal air transport policy.

4.3 The coefficients of the dummy variables PUB and MGT are both statistically significant but the latter is negative. This implies that privately managed airports tend to be more efficient. Additionally, the values of the coefficients support this finding where among the four coefficients, PUB is the largest, indicating that publically owned and managed airports are

the most inefficient among other types of mixed ownership or management airport models.

4.4 The model (at 95% confidence level) represents a true relationship that exists between aviation sector efficiency levels on one side of the spectrum, and the exogenous variables incorporating aviation policy elements on the other.

6.2 Importance and key benefits of the study

The study culminates in designing an aviation policy development framework to assist policymakers in LDCs in devising state-level strategies. The framework provides a means of integrating different elements of strategic planning in a comprehensive and coherent manner. It incorporates the main elements of strategic planning. It follows a three phased procedure starting with (1) setting the planning background with the focus on the situational analysis of the national air transport sector and the measurement of relative efficiency performance. An integral part of the framework is the identification of efficient peer countries that serve as a reference for the selection of the best-fit policy. The framework continues into the second phase with (2) assembling the basic policy that involves specifying policy objectives and identifying the conditions of its success. Yet the planning framework is flexible and holds in its last phase a forward thinking approach that embeds (3) the contingency elements of the policy and tracks the developments that can affect the odds of its achievement.

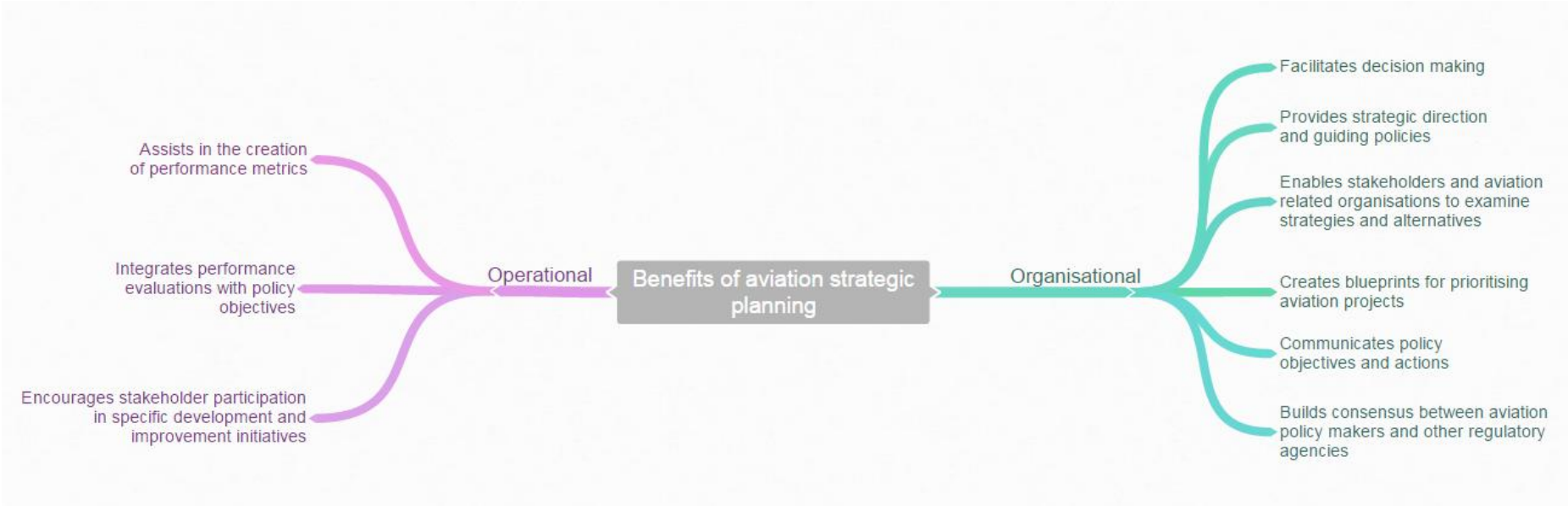
The application of the framework to Jordan's experience in aviation policy development revealed that greater consideration to Jordan's competitiveness capacity and its level of economic development would have resulted in more alternatives for policy actions. Jordan faces a number of external threats and industry weaknesses that affect the relative efficiency of its air transport output, hampering the ability of the country to produce 59% more than its current air passenger traffic numbers, increase its air connectivity levels and strengthen the share of aviation contribution to its GDP and employment. For example, political and security stability is demonstrated through the analysis as being a

highly significant determinant affecting air transport output in countries in different stages of development. The restructuring and deregulation decisions taken by Jordan, in order to be effective, should be supported by policy actions based on strategic and contingency planning elements to allow for flexibility in policy development to tackle uncertainties. In the case of Jordan, the security threats causing high levels of uncertainty were overlooked while devising aviation policy actions. Adding more weight to the volatility of the security situation when producing aviation policy actions might have changed major decisions such as the volume of the investments needed for the expansion of Queen Alia International Airport and the time schedule for the second phase of airport development. Particularly, security conflicts have a direct negative effect on the number of passengers that the airport developers and investors are counting on to guarantee the return on investments and be able to meet commitments of the financial model set by lenders.

Moreover, the peer country performance benchmarking analysis reveals an opportunity for Jordan to improve the level of air transport output through developing efficiency enhancing macro-environment variables, namely: higher education and training, goods markets and labour market. In this situation, aviation policymakers should work in coordination with other regulatory agencies in the field of education, industry and labour to integrate national policies that have a spillover effect on the progress of the aviation sector.

The above findings reiterate the importance of the availability of a structured aviation policy development framework that encompasses strategic planning elements and is designed on the basis of the national capacity of the country to develop and sustain the productivity of its air transport sector and identify vulnerabilities and signposts to assist in facing threats through policy defensive or corrective actions. The key benefits of the availability of an aviation strategic planning framework are set forth in Figure 35.

Figure 35: Benefits of aviation state-level strategic planning*



Source: Author

* Produced by Coggle application. Available at: http://www.coggle.it

Therefore, the importance of this research is summarised in the following points:

1. It fills a gap in the literature of aviation policy making and development in terms of strategic approaches to aviation policy planning;
2. It creates a step-by-step process for a strategic approach to state-level aviation policy development;
3. It demonstrates statistically the existence of a significant relation between the country's level of national competitiveness and the level of air transport sector's output;
4. It classifies best-in-class aviation strategy scenarios based on international obligations, industry regulatory developments and successful practices;
5. It devises a peer-benchmarking scheme which combines policy elements and levels of relative efficiency of the national air transport system; and
6. It presents through the framework information, tools and techniques that can be used by aviation professionals, policymakers, and related industry associations to develop or understand strategic plans that guide aviation-related decisions and actions.

This study has a number of theoretical and practical benefits. It provides the aviation policy development framework, the strategic-related context, and the facilitating tools and techniques to a variety of readers. The research findings provide foundational reference for different groups of people who include but are not limited to: aviation policymakers, regulatory agencies, civil aviation directors and managers, airport authorities, members of national economic boards, aviation industry associations, educators and researchers in aviation management disciplines, consultants and other specialists in strategic planning.

6.3 Limitations of the study

The main limitation of the study has been the unavailability of data. In terms of the economic data used (level of contribution of air transport to GDP and the level of contribution of air transport to employment) these were only available for 2009. Moreover, the Air Connectivity Index data were not available for all the 113 surveyed countries. This resulted in reducing the sample size to 52 countries and limiting the time frame of the analysis to 2009 for both the SEM and DEA models. The availability of time-series data for at least a medium range would have assisted in evaluating the impacts of policy decisions in two different time-frames, i.e. comparing the levels of air transport sector relative efficiency performance between the time when the policy actions are put into implementation and after a five-year time of policy execution, correction and adaptation.

6.4 Areas of further research

The results of the research pave the way for further study into the strategy implementation phase. The link between the strategic plan and the operational plan is critical because operational plans need to align the policy actions to time schedules, financial and human resources, and performance management systems. Research investigating this link between strategic plans and implementation could be instrumental in helping aviation departments fund the strategic plan initiative sufficiently, allocate the needed resources and use the aviation policy objectives as the core of a performance management system.

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APPENDICES

Appendix A

A.1 Definition of variables and related data sources

Variable	Description	Type of data	Source
Inputs			
Institutions	Measures the quality of the institutional environment which is determined by the legal and administrative framework within which individuals, firms and governments interact to generate wealth. It includes both public and private institutions.	Score index ranging from 1 to 7	(WEF, 2009a)
Infrastructure	Measures the quality of the basic physical systems (overall infrastructure) and the specific systems (transportation, telecommunication, sewage, water and electric systems) that are vital to a country's economic development and prosperity.	Score index ranging from 1 to 7	(WEF, 2009a)
Macro-economic stability	Measures the behavior of the aggregate economy. It examines economy-wide phenomena such as government budget balance, government debt, inflation, national savings rate and interest rate spread.	Score index ranging from 1 to 7	(WEF, 2009a)
Health and primary education	Measures the quality of health services, the level of health of the population and the cost of health on economy. This variable also measures the quality of the basic education received by the population such as: education expenditure, quality of primary education and education enrolment rates.	Score index ranging from 1 to 7	(WEF, 2009a)
Higher education and training	Measures the quality and quantity of higher education systems and training through examining expenditure on higher education, quality of management schools, Internet access in schools and universities and the availability of research and training institutions.	Score index ranging from 1 to 7	(WEF, 2009a)
Goods market efficiency	Measures the ability of a country to produce the right mix of products and services given its particular supply-and-demand conditions. It looks into domestic and	Score index	(WEF, 2009a)

	foreign competition as well as the degree of customer orientation and buyer sophistication.	ranging from 1 to 7	
Labour market efficiency	Measure the flexibility and efficiency of the labour market in terms of rigidity of employment, redundancy costs, effect of taxation, pay versus productivity rates and the reliance on professional management.	Score index ranging from 1 to 7	(WEF, 2009a)
Financial market development	Measures the productivity and efficiency of the financial sector in terms of appropriate allocation of national resources and foreign investments for their most productive uses in economic activities.	Score index ranging from 1 to 7	(WEF, 2009a)
Technological readiness	Measures the agility with which an economy adopts technologies to enhance the productivity of its industries. It focuses on the nation's capacity to leverage information and communication technologies in production processes for increased efficiency and innovation.	Score index ranging from 1 to 7	(WEF, 2009a)
Market size	Measures the total volume and potential of a given market in terms of domestic market size and foreign market size.	Score index ranging from 1 to 7	(WEF, 2009a)
Business sophistication	Measures two elements which are the quality of a country's overall business networks and the quality of individual firms' operations and strategies. These factors are particularly important for countries at an advanced stage of development.	Score index ranging from 1 to 7	(WEF, 2009a)
Innovation	Measures the capacity for innovation in a given economy in terms of quality of scientific research institutions, company spending on R&D, university-industry collaboration in R&D, utility patents and intellectual property protection.	Score index ranging from 1 to 7	(WEF, 2009a)
Travel and tourism competitiveness	Measures the factors and policies that drive and facilitate the development of travel and tourism (T&T) sector in a given country. It focuses on the T&T regulatory framework, business environment and infrastructure, as well as human, cultural and natural resources.	Score index ranging from 1 to 6	(WEF, 2009b)
Economic stage of development	Classifies the countries based on five stages of economic development: (1) factor driven; (2) transition from 1 to 3; (3) efficiency driven; (4) transition from 3 to 5; (5)	Stages ranging	(WEF, 2009a)

	innovation driven.	from 1 to 5	
Population count	Measures the total population counts (i.e. both female and male) in a given country.	Real values	(United Nations, 2012)
Surface area	Measures a country's total area, including areas under inland bodies of water and some coastal waterways.	Real values	(United Nations, 2013)(IEP, 2009)
Political and security stability	Measures the level of safety and security in a country. It combines internal and external factors ranging from a nation's level of military expenditure to its relations with neighbouring countries and the level of democracy and respect for human rights.	Score index ranging from 1 to 5 (5 being least peaceful)	(IEP, 2009)
Outputs			
Total aviation contribution to GDP	Measures the percentage of aviation contribution to national GDP. It combines the direct, indirect, induced and catalytic contributions in one value.	Percentage values	(Oxford Economics, 2010)
Total aviation contribution to employment	Measures the percentage of aviation contribution to employment. It combines the direct, indirect, induced and catalytic contributions in one value.	Percentage values	(Oxford Economics, 2010)
Total passengers	Total scheduled passengers' traffic by country.	Real values	(ICAODATA, 2009)
Air connectivity	Measures the level of connectivity of a country in the global air transport network. It captures the full range of interactions among all network nodes and is closely correlated with the degree of liberalisation of air transport markets, and the extent of country's participation in international production networks.	Percentage values	(The World Bank, 2011)

A.2 List of sampled countries with values of variables

	INPUT VARIABLES																OUTPUT VARIABLES			
Country	Institutions	Infrastructure	Macroenvironment stability	Health and primary education	Higher education and training	Goods market efficiency	Labour market efficiency	Financial market sophistication	Technological readiness	Market size	Business sophistication	Innovation	Travel and tourism competitiveness	Political and security stability	Population count	Country size KmSq	Total passengers	Aviation contribution to GDP	Aviation contribution to employment	Air connectivity index
Australia	5.60	5.19	5.56	6.18	5.33	5.20	5.20	5.51	5.39	5.10	4.79	4.43	5.24	1.48	22,328,800	7,692,024	86,206,252	6.1	7.4	5.90
Austria	5.55	5.89	5.22	6.14	5.19	5.14	4.71	4.85	5.39	4.62	5.54	4.46	5.46	1.25	8,384,745	83,871	21817267	1.7	1.8	9.40
Belgium	3.72	2.58	4.77	4.06	5.52	5.11	4.66	4.86	5.26	4.83	5.28	4.62	4.92	1.36	10,879,159	30,528	21314463	2.3	2.5	12.03
Brazil	3.50	3.50	3.93	5.24	4.14	3.87	4.27	4.47	4.06	5.63	4.64	3.52	4.35	2.02	194,946,470	8,514,877	95,739,209	1.3	1.0	2.67
Canada	5.50	5.93	5.24	6.30	5.50	5.08	5.40	5.25	5.63	5.47	5.12	4.80	5.32	1.31	34,108,752	9,984,670	83,993,192	2.8	3.3	13.44
Chile	4.78	4.93	5.48	5.38	4.40	4.83	4.69	4.72	4.28	4.39	4.52	3.41	4.18	1.48	17,113,688	756,102	9,026,446	3.0	2.5	1.79
China	4.39	4.31	5.93	5.72	4.09	4.47	4.74	4.05	3.38	6.63	4.54	3.93	4.33	1.92	1,338,299,512	9,596,961	294,101,226	1.0	0.8	5.70
Colombia	3.37	3.20	4.59	5.34	3.89	3.98	4.29	4.09	3.57	4.63	4.17	3.17	3.89	2.65	46,294,841	1,138,914	14,899,126	1.7	1.9	3.02
Cyprus	5.03	5.22	5.15	6.32	4.81	4.87	4.62	5.00	4.50	2.92	4.80	4.01	4.92	1.74	1,103,647	9,251	6729554	15.2	16.2	4.84
Czech Republic	3.93	4.27	4.99	5.94	5.05	4.82	4.88	4.64	4.75	4.51	4.80	4.01	4.86	1.33	10,525,090	78,867	12367467	0.9	0.9	9.87
Denmark	6.08	5.83	5.71	6.31	5.90	5.21	5.53	5.31	5.92	4.32	5.51	5.04	5.08	1.22	5,544,139	43,094	22,272,961	1.3	1.8	9.11
Ecuador	2.97	2.91	4.99	5.14	3.25	3.32	3.26	3.41	2.90	3.87	3.42	2.34	3.62	2.21	14,464,739	283,561	8,143,766	1.6	1.7	2.39
Egypt	4.13	4.07	3.46	5.20	3.62	3.99	3.46	4.01	3.35	4.81	3.98	3.03	4.09	1.77	81,121,077	1,002,000	10,885,033	8.0	6.6	4.29
Finland	6.05	5.87	5.78	6.46	5.97	4.98	4.85	5.33	5.64	4.23	5.40	5.53	5.07	1.32	5,363,624	338,145	13828812	3.9	5.0	6.16
France	4.95	6.52	4.72	6.22	5.30	4.86	4.39	4.95	5.24	5.78	5.30	4.50	5.34	1.58	64,876,618	551,500	117561564	3.9	3.9	11.64
Germany	5.50	6.59	5.28	6.01	5.07	5.01	4.33	4.68	5.63	6.02	5.82	5.11	5.41	1.39	81,702,329	357,022	158150131	2.6	2.8	12.11
Greece	3.83	4.31	4.02	5.81	4.43	4.09	3.81	4.02	3.86	4.59	4.04	3.14	4.91	1.78	11,319,048	131,957	32,882,441	6.0	6.7	6.13
Hong Kong SAR	5.62	6.54	5.67	5.76	4.74	5.59	5.95	5.68	4.73	4.73	5.19	3.86	5.18	1.96	7,067,800	1,104	45,581,242	8.2	7.3	4.88
Hungary	3.77	4.04	4.50	5.59	4.63	4.22	4.43	4.20	4.44	4.35	3.89	3.45	4.45	1.58	10,008,703	93,028	8081067	1.2	1.3	8.63
Iceland	5.58	5.85	3.57	6.45	5.65	4.72	5.43	3.99	5.57	2.49	4.85	4.55	5.07	1.23	317,398	103,000	1837165	12.9	12.3	3.87
India	4.21	3.47	4.23	4.82	3.96	4.42	4.23	5.10	3.33	6.07	4.76	3.73	4.09	2.42	1,170,938,000	3,287,263	102,984,100	1.5	1.8	3.82
Ireland	5.21	4.19	4.63	6.23	5.12	5.09	4.86	4.60	5.27	4.26	4.97	4.29	4.99	1.33	4,481,430	70,273	26,268,887	5.9	6.1	8.48
Italy	3.44	3.99	4.11	5.99	4.35	4.22	3.74	3.76	4.50	5.67	4.92	3.38	4.78	1.65	60,483,521	301,318	101,823,760	1.5	1.7	9.03
Japan	4.90	5.83	4.22	6.13	5.06	5.06	5.10	4.65	5.23	6.17	5.89	5.51	4.91	1.27	127,450,459	377,915	116,822,111	1.0	1.0	5.28
Jordan	4.97	4.45	3.97	5.56	4.45	4.46	3.97	4.45	3.75	3.27	4.30	3.27	4.25	1.83	6,047,000	89,342	4,770,769	5.3	4.6	4.44
Kenya	3.27	3.01	3.43	4.26	3.69	4.09	4.69	4.67	2.99	3.50	4.18	3.41	3.60	2.27	40,512,682	580,367	6,279,492	3.7	3.0	2.05
Latvia	3.91	4.04	4.20	5.66	4.66	4.29	4.70	4.32	4.00	3.27	3.79	2.94	4.31	1.77	2,242,916	64,589	4,062,704	2.0	2.0	6.90
Lebanon	3.33	2.47	3.58	6.08	4.57	4.44	4.01	4.33	3.24	3.41	4.16	2.65	4.03	2.72	4,227,597	10,400	4,985,499	17.0	16.5	4.63
Luxembourg	5.88	5.56	5.95	6.01	4.51	5.38	4.67	5.31	5.91	3.25	4.85	4.31	4.92	1.96	505,831	2,586	1535261	3.6	6.6	11.74
Malaysia	4.53	5.05	5.00	5.90	4.49	4.77	4.74	5.38	4.51	4.70	4.80	4.06	4.71	1.56	28,401,017	329,847	42,807,496	3.6	3.1	3.91
Malta	4.82	4.60	4.52	5.94	4.59	4.53	4.11	5.16	5.07	2.41	4.33	3.33	4.77	1.96	412,961	316	2918676	18.0	19.7	6.07
Mexico	3.40	3.69	5.29	5.48	3.86	3.97	3.82	4.12	3.53	5.57	4.15	2.99	4.29	2.21	113,423,047	1,964,375	56,568,195	2.0	2.1	4.52
Netherlands	5.06	5.74	5.21	6.22	5.49	5.24	4.81	4.90	6.02	5.12	5.54	4.79	5.09	1.53	16,612,213	41,543	46479064	3.1	3.8	11.73
New Zealand	6.03	4.64	5.24	6.43	5.49	5.20	5.12	5.69	5.24	3.89	4.64	4.10	4.94	1.20	4,367,800	270,467	48,046,439	11.5	12.0	2.03
Nigeria	3.34	2.29	5.43	2.96	3.03	4.24	4.44	4.37	2.91	4.49	4.00	3.06	3.02	2.60	158,423,182	923,768	1,365,343	0.6	0.5	1.94
Norway	5.88	4.95	5.94	6.16	5.48	4.95	4.99	5.29	5.81	4.35	5.12	4.53	4.97	1.22	4,885,240	323,802	27673751	2.6	3.2	7.39
Peru	3.52	2.91	4.66	5.14	3.75	4.21	4.30	4.66	3.39	4.35	4.02	2.71	3.88	1.97	29,076,512	1,285,216	9,316,650	1.7	1.5	1.81
Philippines	3.24	2.91	4.54	5.07	3.92	3.92	3.89	3.85	3.32	4.57	4.06	2.84	3.73	2.33	93,260,798	300,000	23,883,386	2.4	2.5	3.13
Poland	3.90	2.88	4.56	5.88	4.82	4.34	4.54	4.61	3.97	5.07	4.35	3.33	4.18	1.60	38,187,488	312,685	17046474	0.6	0.5	8.16
Portugal	4.49	5.23	4.52	5.95	4.58	4.39	4.14	4.26	4.73	4.40	4.28	3.69	5.01	1.35	10,642,841	92,090	24104119	3.4	3.6	6.41
Romania	3.68	2.67	4.55	5.50	4.30	4.24	4.29	4.40	3.79	4.49	3.79	3.10	4.04	1.59	21,442,012	238,391	7984057	0.9	0.9	6.77
Russian Fed.	3.23	3.62	5.24	5.65	4.30	3.75	4.67	3.27	3.45	5.78	3.59	3.35	4.14	2.75	141,750,000	17,098,242	56,472,313	1.1	0.9	5.30
Singapore	6.15	6.35	5.24	6.22	5.62	5.77	5.91	5.91	5.90	4.53	5.20	5.09	5.24	1.53	5,076,700	699	37,236,371	8.9	6.7	4.09
South Africa	4.47	4.33	4.62	3.60	4.00	4.65	4.15	5.43	3.69	4.86	4.57	3.54	4.10	2.44	49,991,300	1,221,037	32,803,465	3.1	2.6	3.57
Spain	4.38	5.36	4.62	5.82	4.69	4.45	4.08	4.47	4.77	5.52	4.74	3.55	5.29	1.58	46,081,574	505,992	148318298	5.2	4.6	8.49
Sweden	6.10	5.82	5.70	6.22	5.76	5.27	4.91	5.17	6.15	4.63	5.66	5.39	5.28	1.27	9,379,116	450,295	25218784	3.9	4.1	7.20
Switzerland	5.85	6.35	5.63	6.10	5.60	5.24	5.78	5.15	6.01	4.56	5.81	5.56	5.68	1.39	7,825,243	41,277	35928169	2.5	2.9	1.08
Thailand	3.98	4.57	5.37	5.52	4.27	4.46	4.83	4.49	3.71	5.01	4.37	3.29	4.45	2.35	69,122,234	513,120	53,937,248	9.0	5.8	4.06
Turkey	3.49	3.92	4.66	5.32	3.88	4.30	3.65	4.06	3.83	5.22	4.28	3.11	4.20	2.39	72,752,325	463,562	70,653,026	4.4	3.6	6.05
U A E	5.52	5.98	5.35	6.13	4.80	5.19	4.96	4.72	5.44	4.22	4.96	3.87	4.57	1.67	7,511,690	83,600	40,901,752	14.7	13.8	4.77
United Kingdom	5.07	5.43	4.60	6.07	5.17	4.97	5.22	4.87	5.79	5.82	5.24	4.60	5.22	1.65	62,218,761	242,900	198531887	5.0	5.0	11.55
U S A	4.81	5.92	4.31	5.88	5.57	5.13	5.76	4.96	5.61	6.93	5.65	5.77	5.28	2.02	309,050,816	9,629,091	964,402,413	4.9	6.8	22.78

A.3 List of sampled countries at each stage of development

Stage 1 Factor-driven	Transition from 1 to 2	Stage 2 Efficiency-driven	Transition from 2 to 3	Stage 3 Innovation-Driven
India	Egypt	Brazil	Chile	Australia
Kenya		China	Hungary	Austria
Nigeria		Colombia	Latvia	Belgium
Philippines		Ecuador	Lebanon	Canada
		Jordan	Mexico	Cyprus
		Malaysia	Poland	Czech Rep.
		Peru	Romania	Denmark
		South Africa	Russian Fed.	Finland
		Thailand	Turkey	France
				Germany
				Greece
				Hong Kong
				Iceland
				Ireland
				Italy
				Japan
				Luxembourg
				Malta
				Netherlands
				New Zealand
				Norway
				Portugal
				Singapore
				Spain
				Sweden
				Switzerland
				UAE
				UK
				USA

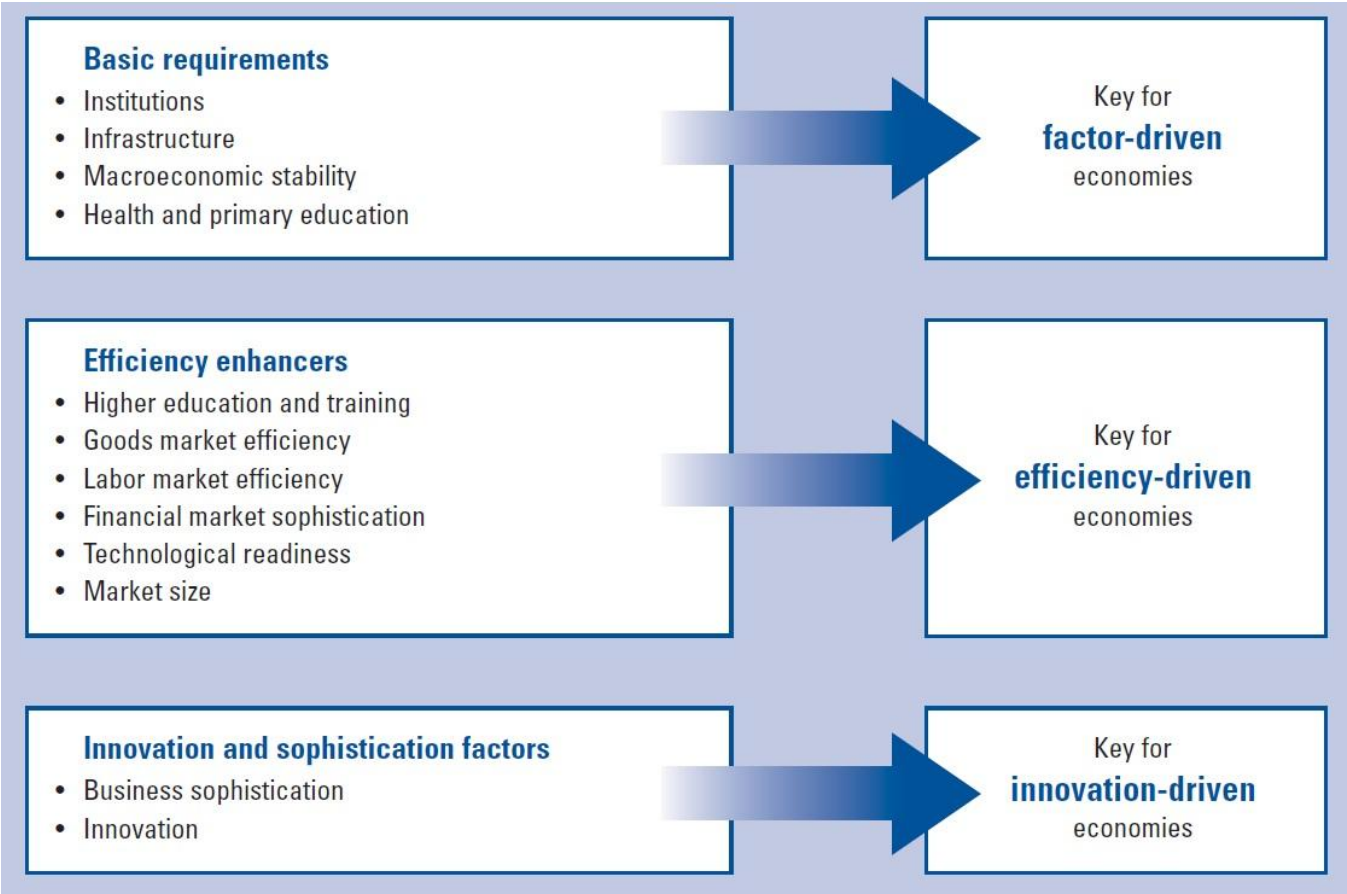
Source: (WEF, 2009a)

A.4 Income thresholds for establishing stages of development

Stage of development	GDP per capita (in US$)
Stage 1: Factor-driven	< 2,000
Transition from stage 1 to stage 2	2,000 – 3,000
Stage 2: Efficiency-driven	3,000 – 9,000
Transition from stage 2 to stage 3	9,000 – 17,000
Stage 3: Innovation-Driven	> 17,000

Source: (WEF, 2009a)

A.5 Key/critical factors for competitiveness of countries at different stages of economic development



Source: (WEF, 2009a)

Appendix B

B.1 List of surveyed countries with respondents in capital bold font

Asia	Europe	Americas	Oceania	Africa
Armenia	Albania	Argentina	Australia	**ALGERIA**
AZERBAIJAN	Austria	Barbados	**NEW**	Botswana
BAHRAIN	Belgium	Bolivia	**ZEALAND**	Burundi
Brunei	Bulgaria	Brazil		Cameroon
Darussalam	Croatia	**CANADA**		**EGYPT**
China	Cyprus	Chile		Ethiopia
Hong Kong	**CZECH**	**COLOMBIA**		Kenya
India	**REPUBLIC**	Costa Rica		**MADAGASCAR**
Indonesia	**DENMARK**	**DOMINICAN**		Malawi
IRAN	**ESTONIA**	**REPUBLIC**		**MALI**
JAPAN	**FINLAND**	Ecuador		**MAURITANIA**
JORDAN	**FRANCE**	El Salvador		**MOROCCO**
Korea	Georgia	Guatemala		Mozambique
KUWAIT	**GERMANY**	Honduras		Namibia
Kyrgyzstan	**GREECE**	**JAMAICA**		Nigeria
LEBANON	**HUNGARY**	Mexico		Senegal
Malaysia	**ICELAND**	Nicaragua		South Africa
Mongolia	Ireland	Panama		Tanzania
Oman	**ITALY**	Paraguay		Tunisia
PAKISTAN	**LATVIA**	Peru		**UGANDA**
Philippines	**LITHUANIA**	Trinidad&		Zambia
QATAR	**LUXEMBOURG**	Tobago		Zimbabwe
Russian Fed.	Macedonia	U S A		
SAUDI ARABIA	**MALTA**	Uruguay		
SINGAPORE	**NETHERLANDS**	**VENEZUELA**		
SRI LANKA	Norway			
Syria	**POLAND**			
Thailand	Portugal			
Turkey	Romania			
UAE	Serbia			
Vietnam	**SLOVAK**			
	REPUBLIC			
	SLOVENIA			
	Spain			
	Sweden			
	SWITZERLAND			
	Ukraine			
	UNITED			
	KINGDOM			

B.2 Template of the questionnaire and copies of replies

Cranfield UNIVERSITY

Cranfield, MK43 0AL, United Kingdom

Mr. XYZ XYZ
(Exact title)
(Country)

Subject: Information Request

Reference: PhD Research [Department of Air Transport, University of Cranfield, United Kingdom], under Topic ***"Framework Development for Formulating Optimum Civil Aviation Strategies"***

Dear Mr.XYZ,

Within the process of data collection for a PhD research on Civil Aviation Strategy Formulation, a representative sample of 140 countries in different world regions is composed.

We would like to collect information about three specific topics. The questions are listed below.

A. Civil Aviation Institutional Framework

1) Is the civil aviation regulator well established and separated in responsibilities from the aviation operators (airport(s) and/or air navigation service provider)?

☐ YES Number & date of Mandate/Decree:_____

☐ NO

B. Air Transport Policy

2) Is there a legal formal policy on granting 5th freedom traffic rights and have you granted fifth freedom traffic rights in any of the air service agreements (ASA) signed with another country?

☐ YES ☐ NO

C. Commercialization

3) Do the country's regulations permit private sector participation (PSP) in the ownership and/or management of airports, airlines and other air transport activities?

☐ YES ☐ NO

Cranfield UNIVERSITY
Cranfield, MK43 0AL, United Kingdom

Kindly send your replies to one of the following:

Email	Fax
n.itani@cranfield.ac.uk	+961.1980006 Ext. 105

Please accept my deep appreciation for your cooperation and assistance.

Best regards

Nadine Itani
PhD Research Student
Cranfield University
United Kingdom

B.2.1 Algeria

10/17/12

Re : Information Request

Dacm Dz [dzdacm@yahoo.fr]
Sent: Wednesday, February 01, 2012 12:39
To: Itani, Nadine Itani

Algeria

Dear Ms Itani
Please find below the informations requested:
A/YES :Law 98-06 dated 27 june 1998
B/YES ; not to grant fifth freedom traffic rights
no fifth freedom traffic rights have been granted in our ASA
C/The law 98-06 permits private sector participation in the ownership and/or management of airports and airlines.
Best Regards.
M.Benchemam.

De : "Itani, Nadine Itani" <n.itani@cranfield.ac.uk>
À : "dzdacm@yahoo.fr" <dzdacm@yahoo.fr>
Envoyé le : Vendredi 27 janvier 2012 9h56
Objet : Information Request

Attn: Directeur de l'Aviation Civile et de la Météorologie
Please find attached the letter requesting specific information concerning the air transport sector.
The information collected is to be used for a PhD research (Cranfield University-UK) within the field of air transport strategy development.

Signature:

Nadine Itani
PhD Research Student
Cranfield University
United Kingdom

B.2.2 Azerbaijan

FROM : Panasonic FAX SYSTEM PHONE NO. : 4986822 Oct. 28 2011 04:16PM P1

Cranfield UNIVERSITY

Cranfield, MK43 0AL, United Kingdom

Mr. Arif Mammadov
Director
Azerbaijan

Subject: Information Request

Reference: PhD Research [Department of Air Transport, University of Cranfield, United Kingdom], under Topic ***"Framework Development for Formulating Optimum Civil Aviation Strategies"***

Dear Mr.Mammadov,

Within the process of data collection for a PhD research on Civil Aviation Strategy Formulation, a representative sample of 140 countries in different world regions is composed.

We would like to collect information about three specific topics. The questions are listed below.

A. Civil Aviation Institutional Framework

1) Is the civil aviation regulator well established and separated in responsibilities from the aviation operators (airport(s) and/or air navigation service provider)?
☒ YES Number & date of Mandate/Decree: N° 512 dated 29.12.2006 of the President of the Republic of Azerbaijan
☐ NO

B. Air Transport Policy

2.1 Is there a legal formal policy on granting 5th freedom traffic rights?
☒ YES ☐ NO

2.2 Have you granted fifth freedom traffic rights in any of the air service agreements (ASA) signed with another country?
☒ YES ☐ NO

Cranfield UNIVERSITY
Cranfield, MK43 0AL, United Kingdom

C. **Commercialization**

3) Do the country's regulations permit private sector participation (PSP) in the ownership and/or management of?

Airports ☐ YES ☒ NO

Airplanes ☒ YES ☐ NO

Kindly send your replies to one of the following:

Email	Fax
n.itani@cranfield.ac.uk	+961.1980006 Ext. 105

Please accept my deep appreciation for your cooperation and assistance.

Best regards

Nadine Itani
PhD Research Student
Cranfield University
United Kingdom

B.2.3 Bahrain

Cranfield
UNIVERSITY

Cranfield, MK43 0AL, United Kingdom

Mr. Abdulrahman Mohammed Al-Gaoud
Undersecretary for Civil Aviation Affairs
Bahrain

Subject: Information Request

Reference: PhD Research [Department of Air Transport, University of Cranfield, United Kingdom], under Topic ***"Framework Development for Formulating Optimum Civil Aviation Strategies"***

Dear Mr.Al-Gaoud,

Within the process of data collection for a PhD research on Civil Aviation Strategy Formulation, a representative sample of 140 countries in different world regions is composed.

We would like to collect information about three specific topics. The questions are listed below.

A. **Civil Aviation Institutional Framework**

1) Is the civil aviation regulator well established and separated in responsibilities from the aviation operators (airport(s) and/or air navigation service provider)?
☑ YES Number & date of Mandate/Decree: Cabinet Ministers decree dated 5 DEC. 2010
☐ NO

B. **Air Transport Policy**

2.1 Is there a legal formal policy on granting 5th freedom traffic rights?
☑ YES ☐ NO

2.2 Have you granted fifth freedom traffic rights in any of the air service agreements (ASA) signed with another country?
☑ YES ☐ NO

Cranfield
UNIVERSITY

Cranfield, MK43 0AL, United Kingdom

C. **Commercialization**

3) Do the country's regulations permit private sector participation (PSP) in the ownership and/or management of airports?

Airports ☑ YES ☐ NO

Airlines ☑ YES ☐ NO

Kindly send your replies to one of the following:

Email	Fax
n.itani@cranfield.ac.uk	+961.1980006 Ext. 105

Please accept my deep appreciation for your cooperation and assistance.

Best regards

Nadine Itani
PhD Research Student
Cranfield University
United Kingdom

B.2.4 Canada

Information Request - framework Development

McMenemy, James [james.mcmenemy@tc.gc.ca] Canada

Sent: Friday, March 09, 2012 21:23
To: Itani, Nadine Itani
Cc: Joynt, Barbara [barbara.joynt@tc.gc.ca]

Dear Ms. Itani:

Thank you for your fax dated November 17, 2011, addressed to Mr. Martin Eley, Director General, Civil Aviation, Transport Canada.

Mr. Eley has requested that I reply on his behalf.

Please accept our apologies for the delay in responding.

In your letter, you requested some information relating to Civil Aviation Policy.

Below are the responses to your questions.

Civil Aviation Institutional Framework
QA(1). Yes. Airports: National Airports Policy, 1994 and Air Navigation: Civil Air Navigation Services Commercialization Act (1996).

Air Transport Policy
QB(2.1). Yes.

Canada's Blue Sky international air policy outlines in which circumstances Canada will seek Open Skies-type agreements, which cover fifth freedom traffic rights.

QB2(2.2) Yes.

Commercialization
QC(3). Airports. It is not a clear cut answer. In the case of the airport authorities (AAs), they are not-for-profit corporations so nobody can purchase shares etc, however, they are private corporations. In addition, AAs can contract out the provision of airport operations, all the way up to the CEO. In the case of non-AAs they are generally owned by municipalities so again, no shares can be purchased, but there is nothing preventing that if the owner decides to sell. In addition there are several instances of private sector corporations operating the airport through a management contract.

QC(3). Airlines. Yes.

If more information is required, please do not hesitate to contact us.

Jim McMenemy
Chief, Aviation Safety Analysis/ Chef, Analyse de la sécurité aérienne
Policy & Regulatory Services / Politiques et services de réglementation
(613)991-2451 facsimile/télécopieur (613) 990-1198/TTY/ATS (613) 990-4500
james.mcmenemy@tc.gc.ca
Transport Canada, Civil Aviation, Place de Ville (AARB), Ottawa Ontario K1A 0N8
Government of Canada / Gouvernement du Canada

B.2.5 Colombia

RV: Information Request

Claudia Beatriz Esguerra Barrangan [claudia.esguerra@aerocivil.gov.co] Colombia
Sent: Thursday, March 22, 2012 19:29
To: Itani, Nadine Itani

Apreciado señor Nitani:
Disculpas por responder solamente ahora pero se me había quedado este email en mis asuntos pendientes.
Espero que le sirva la información.
De acuerdo con mis competencias, le responderé sus inquietudes del punto B.
B. política de transporte aéreo
2.1 ¿Existe una política legal formal sobre la concesión de derechos de tráfico de quinta libertad?
0 Sí 0 No
Respuesta:No. Hay unos lineamientos de política que se siguen para las negociaciones bilaterales de transporte aéreo.
2.2 ¿Han concedido los derechos de tráfico quinta libertad en cualquiera de los acuerdos de servicios aéreos (ASA) firmado con otro país?
0 Sí 0 No
Respuesta:Si.

Cuénteme por favor si requiere información adicional.

Cordial saludo.

Claudia Esguerra B.
Jefe grupo Asuntos Internacionales y Regulatorios-Oficina de Transporte Aéreo

---

De: Alejandra Aristizabal Castañeda
Enviado el: martes, 31 de enero de 2012 04:42 p.m.
Para: Adriana Sanclemente Alzate; Andres Figueredo Serpa
CC: Santiago Castro Gomez; Elizabeth Penagos Agudelo
Asunto: RV: Information Request

Buenas tardes:

Para su información y fines pertinentes. Coordinar con el (las) aérea(s) pertinentes(s).
Cordialmente,

AAc

B.2.6 Czech Republic

Cra

Cranfield, MK43 0AL, United Kingdom

Mr. Jaromir Stolc
Director
Czech Republic
.

Subject: Information Request

Reference: PhD Research [Department of Air Transport, University of Cranfield, United Kingdom], under Topic ***"Framework Development for Formulating Optimum Civil Aviation Strategies"***

Dear Mr. Stolc,

Within the process of data collection for a PhD research on Civil Aviation Strategy Formulation, a representative sample of 140 countries in different world regions is composed.

We would like to collect information about three specific topics. The questions are listed below.

A. Civil Aviation Institutional Framework

1) Is the civil aviation regulator well established and separated in responsibilities from the aviation operators (airport(s) and/or air navigation service provider)?
☒ YES Number & date of Mandate/Decree: Act No. 49/1997 Coll.
☐ NO

B. Air Transport Policy

2.1 Is there a legal formal policy on granting 5th freedom traffic rights?
☐ YES ☒ NO

2.2 Have you granted fifth freedom traffic rights in any of the air service agreements (ASA) signed with another country?
☒ YES ☐ NO

Cra

Cranfield, MK43 0AL, United Kingdom

C. Commercialization

3) Do the country's regulations permit private sector participation (PSP) in the ownership and/or management of?

Airports ☒ YES ☐ NO

Airplanes ☒ YES ☐ NO

Kindly send your replies to one of the following:

Email	Fax
n.itani@cranfield.ac.uk	+961.1980006 Ext. 105

Please accept my deep appreciation for your cooperation and assistance.

Best regards

Nadine Itani
PhD Research Student
Cranfield University
United Kingdom

B.2.7 Denmark

Cranfield UNIVERSITY

Cranfield, MK43 0AL, United Kingdom

Mr. Carsten Falk Hansen
Director General of Civil Aviation
Denmark

Subject: Information Request

Reference: PhD Research [Department of Air Transport, University of Cranfield, United Kingdom], under Topic ***"Framework Development for Formulating Optimum Civil Aviation Strategies"***

Dear Mr. Hansen,

Within the process of data collection for a PhD research on Civil Aviation Strategy Formulation, a representative sample of 140 countries in different world regions is composed.

We would like to collect information about three specific topics. The questions are listed below.

A. Civil Aviation Institutional Framework

1) Is the civil aviation regulator well established and separated in responsibilities from the aviation operators (airport(s) and/or air navigation service provider)?
× YES Number & date of Mandate/Decree:

Publicly owned airports have been seperated from the Civil Aviation Administration/Danish Transport Authority over time on an ad hoc basis. However, one airport (Bornholm) is still owned and operated by the Danish Transport Authority.

The Danish Air Traffic Service (Naviair) was seperated from the Civil Aviation Administration/the Danish Transport Authority as an independant public corporation, pursuant to legal document No. 199 of 7 May 2001.

☐ NO

B. Air Transport Policy

2.1 Is there a legal formal policy on granting 5th freedom traffic rights?
× YES ☐ NO

Cranfield UNIVERSITY

Cranfield, MK43 0AL, United Kingdom

2.2 Have you granted fifth freedom traffic rights in any of the air service agreements (ASA) signed with another country?

× YES ☐ NO

C. **Commercialization**

3) Do the country's regulations permit private sector participation (PSP) in the ownership and/or management of?

Airports × YES ☐ NO

Airplanes × YES ☐ NO

Kindly send your replies to one of the following:

Email	Fax
n.itani@cranfield.ac.uk	+961.1980006 Ext. 105

Please accept my deep appreciation for your cooperation and assistance.

Best regards

Nadine Itani
PhD Research Student
Cranfield University
United Kingdom

B.2.8 Dominican Reupublic

Cranfield
UNIVERSITY

Cranfield, MK43 0AL, United Kingdom

Mr. Benoit Bardouille
Chief Executive Officer
Dominica, Windward Islands

Subject: Information Request

Reference: PhD Research [Department of Air Transport, University of Cranfield, United Kingdom], under Topic ***"Framework Development for Formulating Optimum Civil Aviation Strategies"***

Dear Mr. Bardouille,

Within the process of data collection for a PhD research on Civil Aviation Strategy Formulation, a representative sample of 140 countries in different world regions is composed.

We would like to collect information about three specific topics. The questions are listed below.

A. **Civil Aviation Institutional Framework**

1) Is the civil aviation regulator well established and separated in responsibilities from the aviation operators (airport(s) and/or air navigation service provider)?
☑ YES Number & date of Mandate/Decree: CIVIL AVIATION ACT 2005
☐ NO

B. **Air Transport Policy**

2.1 Is there a legal formal policy on granting 5th freedom traffic rights?
☐ YES ☑ NO

2.2 Have you granted fifth freedom traffic rights in any of the air service agreements (ASA) signed with another country?
☐ YES ☑ NO

Cranfield
UNIVERSITY

Cranfield, MK43 0AL, United Kingdom

C. **Commercialization**

3) Do the country's regulations permit private sector participation (PSP) in the ownership and/or management of airports?

Airports ☐ YES ☑ NO

Airlines ☑ YES ☐ NO

Kindly send your replies to one of the following:

Email	Fax
n.itani@cranfield.ac.uk	+961.1980006 Ext. 105

Please accept my deep appreciation for your cooperation and assistance.

Best regards

Nadine Itani
PhD Research Student
Cranfield University
United Kingdom

B.2.9 Egypt

Cra

Cranfield, MK43 0AL, United Kingdom

Mr. Sameh El-Hefny
President
Egypt

Subject: Information Request

Reference: PhD Research [Department of Air Transport, University of Cranfield, United Kingdom], under Topic ***"Framework Development for Formulating Optimum Civil Aviation Strategies"***

Dear Mr. El-Hefny,

Within the process of data collection for a PhD research on Civil Aviation Strategy Formulation, a representative sample of 140 countries in different world regions is composed.

We would like to collect information about three specific topics. The questions are listed below.

A. Civil Aviation Institutional Framework

1) Is the civil aviation regulator well established and separated in responsibilities from the aviation operators (airport(s) and/or air navigation service provider)?
☒ YES Number & date of Mandate/Decree:_____
☐ NO

B. Air Transport Policy

2) Is there a legal formal policy on granting 5th freedom traffic rights and have you granted fifth freedom traffic rights in any of the air service agreements (ASA) signed with another country?
☒ YES ☐ NO

C. Commercialization

3) Do the country's regulations permit private sector participation (PSP) in the ownership and/or management of airports, airlines and other air transport activities?
☐ YES ☒ NO **airports**

B.2.10 Estonia

Cranfield UNIVERSITY

Cranfield, MK43 0AL, United Kingdom

Mr. Kolt Kaskel
Director General
Estonia

Subject: Information Request

Reference: PhD Research [Department of Air Transport, University of Cranfield, United Kingdom], under Topic ***"Framework Development for Formulating Optimum Civil Aviation Strategies"***

Dear Mr. Kaskel,

Within the process of data collection for a PhD research on Civil Aviation Strategy Formulation, a representative sample of 140 countries in different world regions is composed.

We would like to collect information about three specific topics. The questions are listed below.

A. Civil Aviation Institutional Framework

1) Is the civil aviation regulator well established and separated in responsibilities from the aviation operators (airport(s) and/or air navigation service provider)?
☒ YES Number & date of Mandate/Decree: Regulation No 10, 16.01.1990

☐ NO

B. Air Transport Policy

2.1 Is there a legal formal policy on granting 5th freedom traffic rights?
☒ YES ☐ NO

2.2 Have you granted fifth freedom traffic rights in any of the air service agreements (ASA) signed with another country?
☒ YES ☐ NO

2-6/11/3313

Cranfield UNIVERSITY
Cranfield, MK43 0AL, United Kingdom

C. **Commercialization**

3) Do the country's regulations permit private sector participation (PSP) in the ownership and/or management of?

Airports ☒ YES ☐ NO

Airlines ☒ YES ☐ NO

Kindly send your replies to one of the following:

Email	Fax
n.itani@cranfield.ac.uk	+961.1980006 Ext. 105

Please accept my deep appreciation for your cooperation and assistance.

Best regards

Nadine Itani
PhD Research Student
Cranfield University
United Kingdom

B.2.11 Finland

Cranfield UNIVERSITY

Cranfield, MK43 0AL, United Kingdom

Mr. Pekka Henttu
Director General
Finland

Subject: Information Request

Reference: PhD Research [Department of Air Transport, University of Cranfield, United Kingdom], under Topic ***"Framework Development for Formulating Optimum Civil Aviation Strategies"***

Dear Mr. Henttu,

Within the process of data collection for a PhD research on Civil Aviation Strategy Formulation, a representative sample of 140 countries in different world regions is composed.

We would like to collect information about three specific topics. The questions are listed below.

A. Civil Aviation Institutional Framework

1) Is the civil aviation regulator well established and separated in responsibilities from the aviation operators (airport(s) and/or air navigation service provider)?

☒ YES Number & date of Mandate/Decree: AVIATION ACT 1194/2009 (30 DECEMBER 2009)

☐ NO

NOTE: THE SEPARATION WAS MADE BY THE OLD AVIATION ACT 1242/2005 (25 DEC 2005). BEFORE THAT THE REGULATIVE FUNCTIONS WERE "FUNCTIONALLY SEPARATED" INSIDE THE CIVIL AVIATION ADMINISTRATION.

B. Air Transport Policy

2.1 Is there a legal formal policy on granting 5th freedom traffic rights?

☐ YES ☒ NO

IT IS THE POLICY, NOT A LEGAL OBLIGATION

2.2 Have you granted fifth freedom traffic rights in any of the air service agreements (ASA) signed with another country?

☒ YES ☐ NO

NOTE: FINLAND APPLIES A VERY LIBERAL AIR TRANSPORT POLICY. WE ALWAYS TRY TO INCLUDE 5TH FREEDOM RIGHTS IN OUR ASAs. (AND MULTIDESIGNATION, UNLIMITED DESTINATIONS, UNLIMITED FREQUENCIES ETC.)

Cranfield
UNIVERSITY

Cranfield, MK43 0AL, United Kingdom

C. **Commercialization**

3) Do the country's regulations permit private sector participation (PSP) in the ownership and/or management of?

Airports ☒ YES ☐ NO

Airlines ☒ YES ☐ NO

Kindly send your replies to one of the following:

Email	Fax
n.itani@cranfield.ac.uk	+961.1980006 Ext. 105

Please accept my deep appreciation for your cooperation and assistance.

Best regards

Nadine Itani
PhD Research Student
Cranfield University
United Kingdom

Best regards

www.trafi.fi

Dr. Matti TUPAMÄKI
Director
Air Transport
CAA Finland

TraFi

matti.tupamaki@trafi.fi
+358 20 618 6127
+358 40 522 8727

Finnish Transport Safety Agency
Kumpulantie 9, 00520 Helsinki • P.O. Box 320, FI-00101 Helsinki, Finland

B.2.12 France

Cra

Cranfield, MK43 0AL, United Kingdom

Mr. Patrick Gandil
Directeur Général de l'Aviation Civile
France

Subject: Information Request

Reference: PhD Research [Department of Air Transport, University of Cranfield, United Kingdom], under Topic ***"Framework Development for Formulating Optimum Civil Aviation Strategies"***

Dear Mr. Gandil,

Within the process of data collection for a PhD research on Civil Aviation Strategy Formulation, a representative sample of 140 countries in different world regions is composed.

We would like to collect information about three specific topics. The questions are listed below.

A. Civil Aviation Institutional Framework

1) Is the civil aviation regulator well established and separated in responsibilities from the aviation operators (airport(s) and/or air navigation service provider)?
x YES Number & date of Mandate/Decree:
- _soon to be signed for airport_charges regulation.
- decree 1609-2099 (18 dec 2009) being modified to add performance to charging for air navigation.

☐ NO

B. Air Transport Policy

2.1 Is there a legal formal policy on granting 5th freedom traffic rights?
☐ YES x NO

2.2 Have you granted fifth freedom traffic rights in any of the air service agreements (ASA) signed with another country?
x YES ☐ NO

C. **Commercialization**

3) Do the country's regulations permit private sector participation (PSP) in the ownership and/or management of?

Airports x YES ☐ NO

Airplanes x YES ☐ NO

Kindly send your replies to one of the following:

Email	Fax
n.itani@cranfield.ac.uk	+961.1980006 Ext. 105

Please accept my deep appreciation for your cooperation and assistance.

Best regards

Nadine Itani
PhD Research Student
Cranfield University
United Kingdom

B.2.13 Germany

Cra

Cranfield, MK43 0AL, United Kingdom

Mr. Gerold Reichle
Director General of Civil Aviation and Aerospace
Germany

Subject: Information Request

Reference: PhD Research [Department of Air Transport, University of Cranfield, United Kingdom], under Topic ***"Framework Development for Formulating Optimum Civil Aviation Strategies"***

Dear Mr. Reichle,

Within the process of data collection for a PhD research on Civil Aviation Strategy Formulation, a representative sample of 140 countries in different world regions is composed.

We would like to collect information about three specific topics. The questions are listed below.

A. Civil Aviation Institutional Framework

1) Is the civil aviation regulator well established and separated in responsibilities from the aviation operators (airport(s) and/or air navigation service provider)?
X☐ YES Number & date of Mandate/Decree:_____

☐ NO

B. Air Transport Policy

2.1 Is there a legal formal policy on granting 5th freedom traffic rights?
☐ YES X☐ NO

However, within the European Union traffic rights are liberalised.

2.2 Have you granted fifth freedom traffic rights in any of the air service agreements (ASA) signed with another country?
X☐ YES ☐ NO

Cra

Cranfield, MK43 0AL, United Kingdom

C. **Commercialization**

3) Do the country's regulations permit private sector participation (PSP) in the ownership and/or management of?

Airports X☐ YES ☐ NO

Airplanes X☐ YES ☐ NO

Kindly send your replies to one of the following:

Email	Fax
n.itani@cranfield.ac.uk	+961.1980006 Ext. 105

Please accept my deep appreciation for your cooperation and assistance.

Best regards

Nadine Itani
PhD Research Student
Cranfield University
United Kingdom

B.2.14 Greece

Greece

Information Request from the Hellenic CAA

Angelos BELIYIANNIS [governor@hcaa.gr]
Sent: Thursday, November 17, 2011 11:21
To: Itani, Nadine Itani

Dear Ms. Itani,

Please find below the answers regarding the questions you have addressed to the Governor of HCAA Ms. Fofi Papadimitropoulou

A. Civil Aviation Institutional Framework.
Air Navigation Services are fully separated from the Regulating and Supervising Authority according to the provisions of L.3913/2011.
As far as airports are concerned, the HQ of HCAA in Athens provides the Regulatory framework and the Supervision under Presidential Decree 56/1989, as amended.

Air Transport policy.
2.1 Yes
2.2 Yes

Commercialization.
Airports: Yes
Airlines: Yes

I am wishing you all the best with your studies.

With kind regards,

Angelos BELIYIANNIS
HCAA Governor's Office Director
1 Vasileos Georgiou Str
16 604 Elliniko
Athens-Greece
Tel: +30-210-89.16.525
Fax: +30-210-89.44.279
email: governor@hcaa.gr

B.2.15 Hungary

Cranfield UNIVERSITY

Cranfield, MK43 0AL, United Kingdom

Mr. Máté Gergely
Director General of Civil Aviation
Hungary

.

Subject: Information Request

Reference: PhD Research [Department of Air Transport, University of Cranfield, United Kingdom], under Topic ***"Framework Development for Formulating Optimum Civil Aviation Strategies"***

Dear Mr. Gergely,

Within the process of data collection for a PhD research on Civil Aviation Strategy Formulation, a representative sample of 140 countries in different world regions is composed.

We would like to collect information about three specific topics. The questions are listed below.

A. Civil Aviation Institutional Framework

1) Is the civil aviation regulator well established and separated in responsibilities from the aviation operators (airport(s) and/or air navigation service provider)?
   ☒ YES Number & date of Mandate/Decree: Constitution of Hungary
   ☐ NO

B. Air Transport Policy

2.1 Is there a legal formal policy on granting 5th freedom traffic rights?
☐ YES ☒ NO

2.2 Have you granted fifth freedom traffic rights in any of the air service agreements (ASA) signed with another country?
☐ YES ☒ NO on case-by-case basis

Cranfield UNIVERSITY

Cranfield, MK43 0AL, United Kingdom

C. Commercialization

3) Do the country's regulations permit private sector participation (PSP) in the ownership and/or management of?

Airports ☒ YES ☐ NO

Airplanes ☒ YES ☐ NO

Kindly send your replies to one of the following:

Email	Fax
n.itani@cranfield.ac.uk	+961.1980006 Ext. 105

Please accept my deep appreciation for your cooperation and assistance.

Best regards

Nadine Itani
PhD Research Student
Cranfield University
United Kingdom

B.2.16 Iceland

Cranfield UNIVERSITY

Cranfield, MK43 0AL, United Kingdom

Mr. Petur K.Maack
Director General
Iceland

Subject: Information Request

Reference: PhD Research [Department of Air Transport, University of Cranfield, United Kingdom], under Topic ***"Framework Development for Formulating Optimum Civil Aviation Strategies"***

Dear Mr. Maack,

Within the process of data collection for a PhD research on Civil Aviation Strategy Formulation, a representative sample of 140 countries in different world regions is composed.

We would like to collect information about three specific topics. The questions are listed below.

A. Civil Aviation Institutional Framework

1) Is the civil aviation regulator well established and separated in responsibilities from the aviation operators (airport(s) and/or air navigation service provider)?
☒ YES Number & date of Mandate/Decree: since 1 January 2007

☐ NO

B. Air Transport Policy

2.1 Is there a legal formal policy on granting 5th freedom traffic rights?
☐ YES ☒ NO formal policy but not legal.

2.2 Have you granted fifth freedom traffic rights in any of the air service agreements (ASA) signed with another country?
☒ YES ☐ NO

Cranfield UNIVERSITY

Cranfield, MK43 0AL, United Kingdom

C. **Commercialization**

3) Do the country's regulations permit private sector participation (PSP) in the ownership and/or management of?

Airports ☒ YES ☐ NO

Airplanes ☒ YES ☐ NO

Kindly send your replies to one of the following:

Email	Fax
n.itani@cranfield.ac.uk	+961.1980006 Ext. 105

Please accept my deep appreciation for your cooperation and assistance.

Best regards

Nadine Itani
PhD Research Student
Cranfield University
United Kingdom

B.2.17 Iran

Cranfield UNIVERSITY

Cranfield, MK43 0AL, United Kingdom

Mr. Reza Nakhjavani
Vice Minister of Roads and Urban Development and
President of Civil Organization of the Islamic Republic (CAOIRI)
Iran

Subject: Information Request

Reference: PhD Research [Department of Air Transport, University of Cranfield, United Kingdom], under Topic ***"Framework Development for Formulating Optimum Civil Aviation Strategies"***

Dear Mr. Nakhjavani,

Within the process of data collection for a PhD research on Civil Aviation Strategy Formulation, a representative sample of 140 countries in different world regions is composed.

We would like to collect information about three specific topics. The questions are listed below.

A. Civil Aviation Institutional Framework

1) Is the civil aviation regulator well established and separated in responsibilities from the aviation operators (airport(s) and/or air navigation service provider)?
☒ YES Number & date of Mandate/Decree: 01 March 2000

☐ NO

B. Air Transport Policy

2.1 Is there a legal formal policy on granting 5th freedom traffic rights?
☒ YES ☐ NO

2.2 Have you granted fifth freedom traffic rights in any of the air service agreements (ASA) signed with another country?
☒ YES ☐ NO

Cranfield
UNIVERSITY
Cranfield, MK43 0AL, United Kingdom

C. **Commercialization**

3) Do the country's regulations permit private sector participation (PSP) in the ownership and/or management of?

Airports ☒ YES ☐ NO

Airlines ☒ YES ☐ NO

Kindly send your replies to one of the following:

Email	Fax
n.itani@cranfield.ac.uk	+961.1980006 Ext. 105

Please accept my deep appreciation for your cooperation and assistance.

Best regards

Nadine Itani
PhD Research Student
Cranfield University
United Kingdom

B.2.18 Italy

Cranfield UNIVERSITY

Cranfield, MK43 0AL, United Kingdom

Mr. Alessio Quaranta
Director General
Italy

Subject: Information Request

Reference: PhD Research [Department of Air Transport, University of Cranfield, United Kingdom], under Topic ***"Framework Development for Formulating Optimum Civil Aviation Strategies"***

Dear Mr. Quaranta,

Within the process of data collection for a PhD research on Civil Aviation Strategy Formulation, a representative sample of 140 countries in different world regions is composed.

We would like to collect information about three specific topics. The questions are listed below.

A. **Civil Aviation Institutional Framework**

1) Is the civil aviation regulator well established and separated in responsibilities from the aviation operators (airport(s) and/or air navigation service provider)?

☒ YES Number & date of Mandate/Decree: D. Lgs 250 dated 25/07/1997 Navigation code art. 691 bis

☐ NO

B. **Air Transport Policy**

2.1 Is there a legal formal policy on granting 5th freedom traffic rights?

☐ YES ☒ NO

2.2 Have you granted fifth freedom traffic rights in any of the air service agreements (ASA) signed with another country?

☒ YES ☐ NO

Cranfield UNIVERSITY

Cranfield, MK43 0AL, United Kingdom

C. **Commercialization**

3) Do the country's regulations permit private sector participation (PSP) in the ownership and/or management of?

Airports ☒ YES ☐ NO

Airlines ☒ YES ☐ NO

Kindly send your replies to one of the following:

Email	Fax
n.itani@cranfield.ac.uk	+961.1980006 Ext. 105

Please accept my deep appreciation for your cooperation and assistance.

Best regards

Nadine Itani
PhD Research Student
Cranfield University
United Kingdom

B.2.19 Jamaica

PhD Research
dg@jcaa.gov.jm
Sent: Thursday, November 24, 2011 00:01
To: Itani, Nadine Itani
Cc: Ann Toomer Gayle [jcivav@jcaa.gov.jm]

Jamaica

Dear Ms Itani:

The following are the answers to youi survey questions:

A. 1) NO. The JCAA still provides Air Navigation Services. The conflict is recognized and plans have been made for the separation of the ANS Division from the Regulator.

B. 2.1) YES
2.2) YES

C. 3) Airports: YES, Airlines: YES.

Please feel free to contact us for fuirther information.

Oscar Derby
Director General
Sent from my BlackBerry® wireless device from LIME.

B.2.20 Japan

Cranfield UNIVERSITY
Cranfield, MK43 0AL, United Kingdom

Mr. Masaru Honda
Director General
Japan

Subject: Information Request

Reference: PhD Research [Department of Air Transport, University of Cranfield, United Kingdom], under Topic ***"Framework Development for Formulating Optimum Civil Aviation Strategies"***

Dear Mr. Honda,

Within the process of data collection for a PhD research on Civil Aviation Strategy Formulation, a representative sample of 140 countries in different world regions is composed.

We would like to collect information about three specific topics. The questions are listed below.

A. **Civil Aviation Institutional Framework**

1) Is the civil aviation regulator well established and separated in responsibilities from the aviation operators (airport(s) and/or air navigation service provider)?
☑ YES Number & date of Mandate/Decree:_____
☐ NO

B. **Air Transport Policy**

2.1 Is there a legal formal policy on granting 5th freedom traffic rights?
☐ YES ☐ NO

2.2 Have you granted fifth freedom traffic rights in any of the air service agreements (ASA) signed with another country?
☑ YES ☐ NO

Cranfield UNIVERSITY
Cranfield, MK43 0AL, United Kingdom

C. **Commercialization**

3) Do the country's regulations permit private sector participation (PSP) in the ownership and/or management of?

Airports ☑ YES ☐ NO

Airlines ☑ YES ☐ NO

Kindly send your replies to one of the following:

Email	Fax
n.itani@cranfield.ac.uk	+961.1980006 Ext. 105

Please accept my deep appreciation for your cooperation and assistance.

Best regards

Nadine Itani
PhD Research Student
Cranfield University
United Kingdom

B.2.21 Jordan

Cra

Cranfield, MK43 0AL, United Kingdom

Mr. Mohammad Amin Al-Quran
Chief Commissioner, CEO
Jordan

Subject: Information Request

Reference: PhD Research [Department of Air Transport, University of Cranfield, United Kingdom], under Topic ***"Framework Development for Formulating Optimum Civil Aviation Strategies"***

Dear Mr. Al-Quran,

Within the process of data collection for a PhD research on Civil Aviation Strategy Formulation, a representative sample of 140 countries in different world regions is composed.

We would like to collect information about three specific topics. The questions are listed below.

A. Civil Aviation Institutional Framework

1) Is the civil aviation regulator well established and separated in responsibilities from the aviation operators (airport(s) and/or air navigation service provider)?
   ☒ YES Number & date of Mandate/Decree: Jordan Civil Aviation Law no. 42 of 2007
   ☐ NO

   Airports operators are fully separated from the Jordan Civil Aviation Regulatory Commission (CARC).

   Currently there is a functional separation between ANS Services and CARC in preparation for full separation.

B. Air Transport Policy

2.1 Is there a legal formal policy on granting 5th freedom traffic rights?
☒ YES ☐ NO

2.2 Have you granted fifth freedom traffic rights in any of the air service agreements (ASA) signed with another country?
☒ YES ☐ NO

Cra

Cranfield, MK43 0AL, United Kingdom

C. **Commercialization**

3) Do the country's regulations permit private sector participation (PSP) in the ownership and/or management of?

Airports ☒ YES ☐ NO

Airlines ☒ YES ☐ NO

PSP is permitted as long as national participation is 50.1% or more (substantial ownership and effective control is limited to national entities in Jordan.

Kindly send your replies to one of the following:

Email	Fax
n.itani@cranfield.ac.uk	+961.1980006 Ext. 105

Please accept my deep appreciation for your cooperation and assistance.

Best regards

Nadine Itani
PhD Research Student
Cranfield University
United Kingdom

B.2.22 Kuwait

STATE OF KUWAIT
Directorate General of Civil Aviation

دولة الكويت
الإدارة العامة للطيران المدني

Date : 21 NOV 2011 التاريخ :

Ref. : 0062 /1 الإشارة :

Ms. Nadine Itari ,

PhD Research Student ,

Cranfield University ,

United Kingdom .

Dear Madam ,

We would like to refer to your fax letter dated 16 November 2011 .

Please fined attached herewith your questionnaire filled out with relevant data .

Best wishes .

Sincerely ,

Fawaz A. Al-Farah

President of Civil Aviation

www.kuwait-airport.com.kw
E-Mail : isc@kuwait-airport.com.kw

Cranfield
UNIVERSITY

Cranfield, MK43 0AL, United Kingdom

Mr. Fawaz Abdel Aziz Al-Farah
President of Civil Aviation
Kuwait

Subject: Information Request

Reference: PhD Research [Department of Air Transport, University of Cranfield, United Kingdom], under Topic ***"Framework Development for Formulating Optimum Civil Aviation Strategies"***

Dear Mr. Al-Farah,

Within the process of data collection for a PhD research on Civil Aviation Strategy Formulation, a representative sample of 140 countries in different world regions is composed.

We would like to collect information about three specific topics. The questions are listed below.

A. Civil Aviation Institutional Framework

1) Is the civil aviation regulator well established and separated in responsibilities from the aviation operators (airport(s) and/or air navigation service provider)?
☐ YES Number & date of Mandate/Decree: _____
☑ NO

B. Air Transport Policy

2.1 Is there a legal formal policy on granting 5th freedom traffic rights?
☑ YES ☐ NO

2.2 Have you granted fifth freedom traffic rights in any of the air service agreements (ASA) signed with another country?
☑ YES ☐ NO

Cranfield
UNIVERSITY
Cranfield, MK43 0AL, United Kingdom

C. **Commercialization**

3) Do the country's regulations permit private sector participation (PSP) in the ownership and/or management of?

Airports ☑ YES ☐ NO

Airlines ☑ YES ☐ NO

Kindly send your replies to one of the following:

Email	Fax
n.itani@cranfield.ac.uk	+961.1980006 Ext. 105

Please accept my deep appreciation for your cooperation and assistance.

Best regards

Nadine Itani
PhD Research Student
Cranfield University
United Kingdom

قطاع النقل الجوي

B.2.23 Latvia

Cranfield UNIVERSITY

Cranfield, MK43 0AL, United Kingdom

Attn: Ministry of Transport
Latvia

Subject: Information Request

Reference: PhD Research [Department of Air Transport, University of Cranfield, United Kingdom], under Topic ***"Framework Development for Formulating Optimum Civil Aviation Strategies"***

Dear Sir,

Within the process of data collection for a PhD research on Civil Aviation Strategy Formulation, a representative sample of 140 countries in different world regions is composed.

We would like to collect information about three specific topics. The questions are listed below.

A. Civil Aviation Institutional Framework

1) Is the civil aviation regulator well established and separated in responsibilities from the aviation operators (airport(s) and/or air navigation service provider)?
☒ YES Number & date of Mandate/Decree: Aviation Act Approved_by Parliament on on 23 February 1993 Nr12/13
☐ NO

B. Air Transport Policy

2.1 Is there a legal formal policy on granting 5th freedom traffic rights?
☐ YES ☒ NO

2.2 Have you granted fifth freedom traffic rights in any of the air service agreements (ASA) signed with another country?
☐ YES ☒ NO
The fifth freedom traffic rights are not granted explicitly in the Agreements, but practically in all agreements there is a provision that allows the respective Aviation Authorities on a reciprocal basis to grant the fifth freedom traffic rights to the other contracting party's airline.
We also currently have at least one airline operating fifth freedom flights out of Riga..

Cranfield UNIVERSITY
Cranfield, MK43 0AL, United Kingdom

C. **Commercialization**

3) Do the country's regulations permit private sector participation (PSP) in the ownership and/or management of?

Airports ☒ YES ☐ NO

Airlines ☒ YES ☐ NO

Noticing that, we should bear in mind that to secure intra European traffic right for your own carriers, at least 51% of share capital is to be owned by EU citizens or EU member states.(EU Reg. 1008/2008).
In the same time, to have traffic rights also to third countries you have to have more then 50% ownership rights for your state or nationals in the carrier concerned according to the typical provisions of the bilateral air services agreements. So, the space for maneuvering with the ownership for the airlines is rather small.

Kindly send your replies to one of the following:

Email	Fax
n.itani@cranfield.ac.uk	+961.1980006 Ext. 105

Please accept my deep appreciation for your cooperation and assistance.

Best regards

B.2.24 Lebanon

Cranfield UNIVERSITY

Cranfield, MK43 0AL, United Kingdom

Dr. Hamdi Chaouk
Director General of Civil Aviation
Lebanon

Subject: Information Request

Reference: PhD Research [Department of Air Transport, University of Cranfield, United Kingdom], under Topic ***"Framework Development for Formulating Optimum Civil Aviation Strategies"***

Dear Mr. Chaouk

Within the process of data collection for a PhD research on Civil Aviation Strategy Formulation, a representative sample of 140 countries in different world regions is composed.

We would like to collect information about three specific topics. The questions are listed below.

A. **Civil Aviation Institutional Framework**

1) Is the civil aviation regulator well established and separated in responsibilities from the aviation operators (airport(s) and/or air navigation service provider)?
☒ YES Number & date of Mandate/Decree: LCA Law 481/2002

☐ NO

B. **Air Transport Policy**

2) Is there a legal formal policy on granting 5th freedom traffic rights and have you granted fifth freedom traffic rights in any of the air service agreements (ASA) signed with another country?
☒ YES ☐ NO Without reciprocity

C. **Commercialization**

3) Do the country's regulations permit private sector participation (PSP) in the ownership and/or management of airports, airlines and other air transport activities?
☒ YES ☒ NO Airports
Airlines

REPUBLIC OF LEBANON • MINISTRY OF PUBLIC WORKS & TRANSPORT • DIRECTORATE GENERAL OF CIVIL AVIATION

2/3/2011

B.2.25 Lithuania

Concerning Informataion Request Lithuania

Joris Gintilas [Joris.Gintilas@caa.lt]
Sent: Friday, November 25, 2011 10:08
To: Itani, Nadine Itani

Dear Nadine,

On behalf of lithuanian CAA I would like to present our position on the questions you have provided:

Question A – Yes. CAA was established on 2 July 2001 by the Government of the Republic of Lithuania after the reorganization of the State Enterprise "Civil Aviation Directorate of the Republic of Lithuania" which was responsible for the regulatory functions and air navigation services. As a result regulatory functions (CAA) were separated from air navigation service provider (State Enterprise "Oro navigacija").

Question B
2.1. - No
2.2. - No

Question C
Airport – No
Airlines - Yes

Hope it will help with your PhD research.

Best regards,

Joris Gintilas
Legal Department
Civil Aviation Administration
Republic of Lithuania

B.2.26 Luxembourg

Cra

Cranfield, MK43 0AL, United Kingdom

Mr. Claude Waltzing
Directeur de l'Aviation Civile
Luxembourg

Subject: Information Request

Reference: PhD Research [Department of Air Transport, University of Cranfield, United Kingdom], under Topic ***"Framework Development for Formulating Optimum Civil Aviation Strategies"***

Dear Mr. Waltzing,

Within the process of data collection for a PhD research on Civil Aviation Strategy Formulation, a representative sample of 140 countries in different world regions is composed.

We would like to collect information about three specific topics. The questions are listed below.

A. Civil Aviation Institutional Framework

1) Is the civil aviation regulator well established and separated in responsibilities from the aviation operators (airport(s) and/or air navigation service provider)?
   ☒ YES Number & date of Mandate/Decree:_____
   ☐ NO

B. Air Transport Policy

2.1 Is there a legal formal policy on granting 5th freedom traffic rights?
☐ YES ☒ NO

2.2 Have you granted fifth freedom traffic rights in any of the air service agreements (ASA) signed with another country?
☒ YES ☐ NO

Cra

Cranfield, MK43 0AL, United Kingdom

C. Commercialization

3) Do the country's regulations permit private sector participation (PSP) in the ownership and/or management of?

Airports ☒ YES ☐ NO

Airplanes ☒ YES ☐ NO

Kindly send your replies to one of the following:

Email	Fax
n.itani@cranfield.ac.uk	+961.1980006 Ext. 105

Please accept my deep appreciation for your cooperation and assistance.

Best regards

Nadine Itani
PhD Research Student
Cranfield University
United Kingdom

B.2.27 Madagascar

A. Civil Aviation Institutional Framework

1) Is the civil aviation regulator well established and separated in responsibilities from the aviation operators (airport(s) and/or air navigation service provider)?
☒ YES Number & date of Mandate/Decree: Decree n°99-821 dated 20 October 1999 establishing the Statutes of Aviation Civile de Madagascar
☐ NO

B. Air Transport Policy

2.1 Is there a legal formal policy on granting 5th freedom traffic rights?
☐ YES ☒ NO

2.2 Have you granted fifth freedom traffic rights in any of the air service agreements (ASA) signed with another country?
☒ YES ☐ NO

C. Commercialization

3) Do the country's regulations permit private sector participation (PSP) in the ownership and/or management of?
Airports ☒ YES ☐ NO

Airplanes ☒ YES ☐ NO

B.2.28 Mali

Cranfield UNIVERSITY

Cranfield, MK43 0AL, United Kingdom

Mrs. Téné Issabre Sanogo
Directeur Général
Mali

Subject: Information Request

Reference: PhD Research [Department of Air Transport, University of Cranfield, United Kingdom], under Topic ***"Framework Development for Formulating Optimum Civil Aviation Strategies"***

Dear Mr. Sanogo,

Within the process of data collection for a PhD research on Civil Aviation Strategy Formulation, a representative sample of 140 countries in different world regions is composed.

We would like to collect information about three specific topics. The questions are listed below.

A. **Civil Aviation Institutional Framework**

1) Is the civil aviation regulator well established and separated in responsibilities from the aviation operators (airport(s) and/or air navigation service provider)?
☒ YES Number & date of Mandate/Decree: ORDONNANCE N°05024/PRM DU 27/09/2005
☐ NO

B. **Air Transport Policy**

2.1 Is there a legal formal policy on granting 5th freedom traffic rights?
☐ YES ☒ NO

2.2 Have you granted fifth freedom traffic rights in any of the air service agreements (ASA) signed with another country?
☒ YES ☐ NO

MINISTERE DE L'EQUIPEMENT
ET DES TRANSPORTS
Agence Nationale de l'Aviation Civile
ARRIVE LE 17 11 11
Sous le N° 3403

Cranfield UNIVERSITY
Cranfield, MK43 0AL, United Kingdom

C. Commercialization

3) Do the country's regulations permit private sector participation (PSP) in the ownership and/or management of?

Airports ☒ YES ☐ NO

Airlines ☒ YES ☐ NO

Kindly send your replies to one of the following:

Email	Fax
n.itani@cranfield.ac.uk	+961.1980008 Ext. 105

Please accept my deep appreciation for your cooperation and assistance.

Best regards

Nadine Itani
PhD Research Student
Cranfield University
United Kingdom

B.2.29 Malta

Cra

Cranfield, MK43 0AL, United Kingdom

Mr. Ian Falzon
Director General
Malta

Subject: Information Request

Reference: PhD Research [Department of Air Transport, University of Cranfield, United Kingdom], under Topic ***"Framework Development for Formulating Optimum Civil Aviation Strategies"***

Dear Mr. Falzon,

Within the process of data collection for a PhD research on Civil Aviation Strategy Formulation, a representative sample of 140 countries in different world regions is composed.

We would like to collect information about three specific topics. The questions are listed below.

A. Civil Aviation Institutional Framework

1) Is the civil aviation regulator well established and separated in responsibilities from the aviation operators (airport(s) and/or air navigation service provider)?
☒ YES Number & date of Mandate/Decree:
The Civil Aviation Act (Act XLIII of 1972), which entered into force on 21 March 1973 and referenced as Chapter 232 (CAP 232) of the Laws of Malta.
The Authority for Transport in Malta Act (Act XV of 2009), which entered into force on 1 January 2010 and referenced as Chapter 499 (CAP 499) of the Laws of Malta.

☐ NO

B. Air Transport Policy

2.1 Is there a legal formal policy on granting 5th freedom traffic rights?
☒ YES ☐ NO

2.2 Have you granted fifth freedom traffic rights in any of the air service agreements (ASA) signed with another country?
☒ YES ☐ NO

Cra

Cranfield, MK43 0AL, United Kingdom

C. **Commercialization**

3) Do the country's regulations permit private sector participation (PSP) in the ownership and/or management of?

Airports ☒ YES ☐ NO

Airplanes ☒ YES ☐ NO

Kindly send your replies to one of the following:

Email	Fax
n.itani@cranfield.ac.uk	**+961.1980006 Ext. 105**

Please accept my deep appreciation for your cooperation and assistance.

Best regards

Nadine Itani
PhD Research Student
Cranfield University
United Kingdom

B.2.30 Mauritania

11 January 2012 CAV/GEN/52

Ms Nadine Itani
PhD Research Student
Cranfield University
UNITED KINGDOM

Dear Ms Nadine Itani

INFORMATION REQUEST ON "FRAMEWORK DEVELOPMENT FOR FORMULATING OPTIMUM CIVIL AVIATION STRATEGIES"

Please refer to your letter on the above subject and find below information requested about the three specific topics.

A. **Civil Aviation Institutional Framework**.

(i) Is the civil aviation regulator well established and separated in responsibilities from the aviation operators (airport(s) and/or air navigation service provider"?

No.

B **Air Transport Policy**

2.1 Is there a legal formal policy on granting 5th freedom traffic rights?

No

2.2 Have you granted fifth freedom traffic rights in any of the air service agreements (ASA) signed with another country?

Yes

C. **Commercialization**

3) Do the country's regulations permit private sector participation (PSP) in the ownership and/or management of?

Airports: No
Airlines: No regulations

Yours faithfully

HGhoolchund

A GUNGAH
for **Director of Civil Aviation**

DEPARTMENT OF CIVIL AVIATION
FAXED TO 0209611980006
ON 11/01/2012 @ 1453
SN [redacted] PAGE [redacted]

B.2.31 Morocco

Cra

Cranfield, MK43 0AL, United Kingdom

Mr. Abdennebi Manar
Directeur Général de l'Aviation Civile par intérim
Morocco

Subject: Information Request

Reference: PhD Research [Department of Air Transport, University of Cranfield, United Kingdom], under Topic ***"Framework Development for Formulating Optimum Civil Aviation Strategies"***

Dear Mr. Manar,

Within the process of data collection for a PhD research on Civil Aviation Strategy Formulation, a representative sample of 140 countries in different world regions is composed.

We would like to collect information about three specific topics. The questions are listed below.

A. Civil Aviation Institutional Framework

1) Is the civil aviation regulator well established and separated in responsibilities from the aviation operators (airport(s) and/or air navigation service provider)?
☒ YES Number & date of Mandate/Decree*:*
Décret pris pour l'application de la loi N° 14-89 transformant l'Office des Aéroports de Casablanca en Office National des Aéroports.
☐ NO

B. Air Transport Policy

2.1 Is there a legal formal policy on granting 5th freedom traffic rights?
☒ YES ☐ NO

2.2 Have you granted fifth freedom traffic rights in any of the air service agreements (ASA) signed with another country?
☒ YES ☐ NO

Cra

Cranfield, MK43 0AL, United Kingdom

C. **Commercialization**

3) Do the country's regulations permit private sector participation (PSP) in the ownership and/or management of?

Airports ☐ YES ☒ NO

Airlines ☒ YES ☐ NO

Kindly send your replies to one of the following:

Email	Fax
n.itani@cranfield.ac.uk	+961.1980006 Ext. 105

Please accept my deep appreciation for your cooperation and assistance.

Best regards

Nadine Itani
PhD Research Student
Cranfield University
United Kingdom

B.2.32 Netherlands

Cranfield UNIVERSITY

Cranfield, MK43 0AL, United Kingdom

Mrs. Ellen Bien
Director Civil Aviation
Netherlands

Subject: Information Request

Reference: PhD Research [Department of Air Transport, University of Cranfield, United Kingdom], under Topic ***"Framework Development for Formulating Optimum Civil Aviation Strategies"***

Dear Mrs. Bien,

Within the process of data collection for a PhD research on Civil Aviation Strategy Formulation, a representative sample of 140 countries in different world regions is composed.

We would like to collect information about three specific topics. The questions are listed below.

A. Civil Aviation Institutional Framework

1) Is the civil aviation regulator well established and separated in responsibilities from the aviation operators (airport(s) and/or air navigation service provider)?
X YES Number & date of Mandate/Decree

Apart from several EU Aviation Regulations and Directives Aviation requirements in the Netherlands basically are laid down in the Act on Aviation and the Aviation Act:

- **Act on Aviation (Wet Luchtvaart) 1-1-1993; Last revised: 1.12.2011**

  Aviation operators, (Act on Aviation mainly parts2,3, 4, 5, 6)

  Airports (Act on Aviation more specific part 8)

  Navigation service providers (Act on Aviation more specific part 5)

- **Aviation Act (Luchtvaartwet) 1-10-1959; Last revised: 21.04.2011**

  Aviation operators, (Aviation Act mainly part 3)

Cranfield UNIVERSITY

Cranfield, MK43 0AL, United Kingdom

☐ NO

B. Air Transport Policy

2.1 Is there a legal formal policy on granting 5th freedom traffic rights?

☐ YES X NO

2.2 Have you granted fifth freedom traffic rights in any of the air service agreements (ASA) signed with another country?

X YES ☐ NO

C. Commercialization

3) Do the country's regulations permit private sector participation (PSP) in the ownership and/or management of?

Airports ☐ YES X NO (no PSP in Schiphol permitted, PSP is permitted in some regional airports like Maastricht Aachen Airport)

Airlines X YES (EU OWNCO regulations) ☐ NO

Kindly send your replies to one of the following:

Email	Fax
n.itani@cranfield.ac.uk	**+961.1980006 Ext. 105**

Please accept my deep appreciation for your cooperation and assistance.

Best regards

B.2.33 Newzealand

Information Request

Charlotte Day [Charlotte.Day@caa.govt.nz] NewZealand
Sent: Monday, January 30, 2012 03:42
To: Itani, Nadine Itani

Hi Nadine,

My name is Charlotte Day and work for the Civil Aviation Authority in New Zealand.

In response to your request for information:

1) **Is the civil aviation regulator well established and separated in responsibilities from the aviation operators?**

In New Zealand the regulator is separated from aviation operators by virtue of the Civil Aviation Authority Act 1990.

2) **Air Transport Policy questions.**

These questions do not fall within the field of operation of the CAA. Please contact John Macilree at the Ministry Of Transport New Zealand for more information: j.macilree@transport.govt.nz

3) **Commercialisation questions.**

These questions are also not within the remit of the CAA. Please contact John Macilree at the Ministry Of Transport.

Please contact me on the above e-mail address if you have any questions.

Best wishes,

Charlotte

RE: Information Request New Zealand

John Macilree [j.macilree@transport.govt.nz]
Sent: Tuesday, January 31, 2012 04:24
To: Itani, Nadine Itani

Nadine, thanks for your queries. Given my role in air services negotiations and association with the Centre for Air Transport Research at Otago University (http://catr.otago.ac.nz/), this is an area that I take a particular interest in.

In answer to your questions with respect to New Zealand:

B. Air Transport Policy
2.1 Is there a legal formal policy on granting 5th freedom traffic rights? YES

However, the part of your question about whether it is a "legal" policy surprises me.

I would consider a full exchange of fifth freedom rights to be an essential part of an "open skies" policy so assume that you would be looking for references to "open skies" in policy statements. It may, however, be rare for a policy statement to address the specific traffic rights to be exchanged in individual bilateral arrangements. In New Zealand's case note the first bullet point in our current policy which dates from 1988 (see:
http://www.beehive.govt.nz/feature/international-air-transport-policy-new-zealand).

2.2 Have you granted fifth freedom traffic rights in any of the air service agreements (ASA) signed with another country? YES

In New Zealand's case, because of our geographic isolation and the fact it is not possible to fly non-stop to major markets in Europe in particular, exchanging fifth freedom rights have been a particular priority.

The challenge for your research will be that such traffic rights are usually exchanged in bilateral understandings that are generally not made public. Countries may exchange fifth freedom rights subject to a quota on the amount of fifth freedom carriage. If you have not already found it, you may find the World Trade Organization material useful in partially answering this question (for links see:
http://macilree.blogspot.co.nz/2010/07/wto-makes-public-its-air-services.html).

I am happy to try to answer any related queries that you may have. I keep a personal web log focussing on aeropolitics at http://macilree.blogspot.co.nz/ that may provide you with some useful links. I also managed to track down the 1995 US policy statement which was very hard to find on the web (see:
http://www.airlineinfo.com/Sites/DailyAirline/web-content/treaties/usintlstatement.pdf).

C. Commercialization
3) Do the country's regulations permit private sector participation (PSP) in the ownership and/or management of? Airports YES Airlines YES

Wellington are owned by the private sector and local government.

Air New Zealand was privatised in 1989 but since getting into financial difficulties in 2001 has majority government ownership. The airline listed on the stock exchange.

Kind regards

John Macilree
Principal Adviser
New Zealand Ministry of Transport

DDI +64 4 439 9347 Cell 021 918 158 Main number +64 4 439 9000
j.macilree@transport.govt.nz www.transport.govt.nz

-----Original Message-----
From: Itani, Nadine Itani [mailto:n.itani@cranfield.ac.uk]
Sent: Monday, 30 January 2012 11:34 p.m.
To: John Macilree
Subject: Information Request

Dear Mr. John

Ms. Charlotte Day of CAA passed to me your email.

I am a PhD student at Cranfield University (UK) Department of Air Transport. My research topic focuses on developing a framework for civil aviation strategy formulation.

The research sample include countries from different world regions. I am attaching in this regard a brief questionnaire of three questions. Ms. Day already answered the first question which is related to the CAA institutional side. I appreciate if you answer the last two questions (question 2 and 3) which fall within your field of responsibility.

Thank you so much for your kind cooperation

Nadine Itani

MINISTRY OF TRANSPORT
Wellington (Head Office) | 89 The Terrace | PO Box 3175 | Wellington 6140 | NEW ZEALAND | Tel: +64 4 439 9000 | Fax: +64 4 439 9001
Auckland | NZ Government Auckland Policy Office | 45 Queen Street | PO Box 106238 | Auckland City | Auckland 1143 | NEW ZEALAND | Tel: +64 9 9854827 | Fax: +64 9 9854849
Christchurch | 7 Winston Avenue, Papanui | PO Box 3014 | Christchurch 8140 | NEW ZEALAND | Tel: +64 3 366 9304 | Fax: +64 3 366 9317

B.2.34 Pakistan

Pakistan

Information request (PhD research)

Muzaffar Alam [Muzaffar.Alam@caapakistan.com.pk]

Sent: Thursday, October 27, 2011 18:11
To: Itani, Nadine Itani
Cc: Ghulam Murtaza [Ghulam.Murtaza@caapakistan.com.pk]; Khawar Ghayas [Khawar.Ghayas@caapakistan.com.pk]; Zulfiqar Ali Mirani [Zulfiqar.Mirani@caapakistan.com.pk]

Dear Nadine Itani

Reference your letter dated 25 oct 2011 regarding the subject matter.
Our response to your questionnaire is as below:

A1) No. Restructuring of Pakistan CAA is under process.

B2.1) Yes. Under National Aviation Policy which is posted on our website.

B2.2) Yes.
C3) Airports Yes. Airplanes Yes.

Best regards

Syed Muzaffar Alam
GM Air Transport
Pakistan CAA

B.2.35 Poland

Cra

Cranfield, MK43 0AL, United Kingdom

Mr. Grzegorz Kruszynski
President of Civil Aviation Office
Poland

Subject: Information Request

Reference: PhD Research [Department of Air Transport, University of Cranfield, United Kingdom], under Topic ***"Framework Development for Formulating Optimum Civil Aviation Strategies"***

Dear Mr. Kruszynski,

Within the process of data collection for a PhD research on Civil Aviation Strategy Formulation, a representative sample of 140 countries in different world regions is composed.

We would like to collect information about three specific topics. The questions are listed below.

A. Civil Aviation Institutional Framework

1) Is the civil aviation regulator well established and separated in responsibilities from the aviation operators (airport(s) and/or air navigation service provider)?
   ☒ YES Number & date of Mandate/Decree: Aviation Act of 3rd July 2002 (OJ of 2006, No 100, item 696, as amended)
   ☐ NO

B. Air Transport Policy

2.1 Is there a legal formal policy on granting 5th freedom traffic rights?
☒ YES ☐ NO

2.2 Have you granted fifth freedom traffic rights in any of the air service agreements (ASA) signed with another country?
☒ YES ☐ NO

Cra

Cranfield, MK43 0AL, United Kingdom

C. **Commercialization**

3) Do the country's regulations permit private sector participation (PSP) in the ownership and/or management of?

Airports ☒ YES ☐ NO (limited with regard to ownership of international airports)

Airplanes ☒ YES ☐ NO

Kindly send your replies to one of the following:

Email	Fax
n.itani@cranfield.ac.uk	+961.1980006 Ext. 105

Please accept my deep appreciation for your cooperation and assistance.

Best regards

Nadine Itani
PhD Research Student
Cranfield University
United Kingdom

B.2.36 Qatar

Cranfield, MK43 0AL, United Kingdom

Mr. Abdul Aziz Mohamed Al Noaimi
Chairman
Qatar

Subject: Information Request

Reference: PhD Research [Department of Air Transport, University of Cranfield, United Kingdom], under Topic ***"Framework Development for Formulating Optimum Civil Aviation Strategies"***

Dear Mr. Al Noaimi,

Within the process of data collection for a PhD research on Civil Aviation Strategy Formulation, a representative sample of 140 countries in different world regions is composed.

We would like to collect information about three specific topics. The questions are listed below.

A. Civil Aviation Institutional Framework

1) Is the civil aviation regulator well established and separated in responsibilities from the aviation operators (airport(s) and/or air navigation service provider)?
☐ YES Number & date of Mandate/Decree:_____
☒ NO

B. Air Transport Policy

2) Is there a legal formal policy on granting 5th freedom traffic rights and have you granted fifth freedom traffic rights in any of the air service agreements (ASA) signed with another country?
☒ YES ☐ NO

C. Commercialization

3) Do the country's regulations permit private sector participation (PSP) in the ownership and/or management of airports, airlines and other air transport activities?
Airports ☐ YES ☒ NO
Airports ☒ YES ☐ NO

B.2.37 Saudi Arabia

Mr. Faisal H. Al-Sugair
President
Saudi Arabia

Subject: Information Request

Reference: PhD Research [Department of Air Transport, University of Cranfield, United Kingdom], under Topic ***"Framework Development for Formulating Optimum Civil Aviation Strategies"***

Dear Mr. Al-Sugair,

Within the process of data collection for a PhD research on Civil Aviation Strategy Formulation, a representative sample of 140 countries in different world regions is composed.

We would like to collect information about three specific topics. The questions are listed below.

A. Civil Aviation Institutional Framework

1) Is the civil aviation regulator well established and separated in responsibilities from the aviation operators (airport(s) and/or air navigation service provider)?
☐ YES Number & date of Mandate/Decree:_____

☒ NO

B. Air Transport Policy

2) Is there a legal formal policy on granting 5th freedom traffic rights and have you granted fifth freedom traffic rights in any of the air service agreements (ASA) signed with another country?
☒ YES ☐ NO

C. Commercialization

3) Do the country's regulations permit private sector participation (PSP) in the ownership and/or management of airports, airlines and other air transport activities?
Airports ☒ YES ☐ NO **Medinah Airport under BOT agreement**
Airlines ☒ YES ☐ NO

B.2.38 Singapore

Cranfield UNIVERSITY

Cranfield, MK43 0AL, United Kingdom

Mr. Yap Ong Heng
Director General of Civil Aviation
Singapore

Subject: Information Request

Reference: PhD Research [Department of Air Transport, University of Cranfield, United Kingdom], under Topic ***"Framework Development for Formulating Optimum Civil Aviation Strategies"***

Dear Mr. Heng,

Within the process of data collection for a PhD research on Civil Aviation Strategy Formulation, a representative sample of 140 countries in different world regions is composed.

We would like to collect information about three specific topics. The questions are listed below.

A. **Civil Aviation Institutional Framework**

1) Is the civil aviation regulator well established and separated in responsibilities from the aviation operators (airport(s) and/or air navigation service provider)?
☒ YES Number & date of Mandate/Decree: CAAS Act 2009
☐ NO

B. **Air Transport Policy**

2.1 Is there a legal formal policy on granting 5th freedom traffic rights?
☐ YES ☒ NO

2.2 Have you granted fifth freedom traffic rights in any of the air service agreements (ASA) signed with another country?
☒ YES ☐ NO

RECEIVED 17 NOV 2011 CAAS

Cranfield UNIVERSITY
Cranfield, MK43 0AL, United Kingdom

C. **Commercialization**

3) Do the country's regulations permit private sector participation (PSP) in the ownership and/or management of?

Airports ☑ YES ☐ NO

Airlines ☑ YES ☐ NO

Kindly send your replies to one of the following:

Email	Fax
n.itani@cranfield.ac.uk	+961.1980006 Ext. 105

Please accept my deep appreciation for your cooperation and assistance.

Best regards

Nadine Itani
PhD Research Student
Cranfield University
United Kingdom

B.2.39 Slovak Republic

Cranfield UNIVERSITY

Cranfield, MK43 0AL, United Kingdom

Ms. Radmila Valícková
Director General
Slovak Republic

Subject: Information Request

Reference: PhD Research [Department of Air Transport, University of Cranfield, United Kingdom], under Topic ***"Framework Development for Formulating Optimum Civil Aviation Strategies"***

Dear Ms. Valícková,

Within the process of data collection for a PhD research on Civil Aviation Strategy Formulation, a representative sample of 140 countries in different world regions is composed.

We would like to collect information about three specific topics. The questions are listed below.

A. Civil Aviation Institutional Framework

1) Is the civil aviation regulator well established and separated in responsibilities from the aviation operators (airport(s) and/or air navigation service provider)?
   ☒ YES Number & date of Mandate/Decree: AIR ACT 143/1998
   ☐ NO

B. Air Transport Policy

2.1 Is there a legal formal policy on granting 5th freedom traffic rights?
☐ YES ☒ NO

2.2 Have you granted fifth freedom traffic rights in any of the air service agreements (ASA) signed with another country?
☐ YES ☒ NO

Cranfield UNIVERSITY
Cranfield, MK43 0AL, United Kingdom

C. Commercialization

3) Do the country's regulations permit private sector participation (PSP) in the ownership and/or management of?

Airports ☒ YES ☐ NO

Airplanes ☒ YES ☐ NO

Kindly send your replies to one of the following:

Email	Fax
n.itani@cranfield.ac.uk	+961.1980006 Ext. 105

Please accept my deep appreciation for your cooperation and assistance.

Best regards

Nadine Itani
PhD Research Student
Cranfield University
United Kingdom

B.2.40 Slovenia

Cranfield UNIVERSITY

Cranfield, MK43 0AL, United Kingdom

Mr. Mirko Komac
Director General
Slovenia

Subject: Information Request

Reference: PhD Research [Department of Air Transport, University of Cranfield, United Kingdom], under Topic ***"Framework Development for Formulating Optimum Civil Aviation Strategies"***

Dear Mr. Komac,

Within the process of data collection for a PhD research on Civil Aviation Strategy Formulation, a representative sample of 140 countries in different world regions is composed.

We would like to collect information about three specific topics. The questions are listed below.

A. Civil Aviation Institutional Framework

1) Is the civil aviation regulator well established and separated in responsibilities from the aviation operators (airport(s) and/or air navigation service provider)?
☒ YES Number & date of Mandate/Decree: Aviation Act, Official Gazette of the Republic of Slovenia, No. 81/2010 (last issue)
☐ NO

B. Air Transport Policy

2.1 Is there a legal formal policy on granting 5th freedom traffic rights?
☐ YES ☒ NO

2.2 Have you granted fifth freedom traffic rights in any of the air service agreements (ASA) signed with another country?
☒ YES ☐ NO

Cranfield UNIVERSITY
Cranfield, MK43 0AL, United Kingdom

C. **Commercialization**

3) Do the country's regulations permit private sector participation (PSP) in the ownership and/or management of?

Airports ☒ YES ☐ NO

Airplanes ☒ YES ☐ NO

Kindly send your replies to one of the following:

Email	Fax
n.itani@cranfield.ac.uk	+961.1980006 Ext. 105

Please accept my deep appreciation for your cooperation and assistance.

Best regards

Nadine Itani
PhD Research Student
Cranfield University
United Kingdom

B.2.41 Srilanka

Cra

Cranfield, MK43 0AL, United Kingdom

Mr. H.M.C. Nimalsiri
Director General of Civil Aviation and Chief Executive Officer
Sri Lanka

Subject: Information Request

Reference: PhD Research [Department of Air Transport, University of Cranfield, United Kingdom], under Topic ***"Framework Development for Formulating Optimum Civil Aviation Strategies"***

Dear Mr. Nimalsiri,

Within the process of data collection for a PhD research on Civil Aviation Strategy Formulation, a representative sample of 140 countries in different world regions is composed.

We would like to collect information about three specific topics. The questions are listed below.

A. Civil Aviation Institutional Framework

1) Is the civil aviation regulator well established and separated in responsibilities from the aviation operators (airport(s) and/or air navigation service provider)?
✓☐ YES Number & date of Mandate/Decree: *Civil Aviation Act No 14 of 2010.*

☐ NO

B. Air Transport Policy

2.1 Is there a legal formal policy on granting 5th freedom traffic rights?
✓☐ YES ☐ NO

There is a Cabinet Decision on the mechanism for granting traffic Rights including 5th Freedom Traffic Rights; however there is no Act of Parliament as such.

2.2 Have you granted fifth freedom traffic rights in any of the air service agreements (ASA) signed with another country?
✓☐ YES ☐ NO

Of course, in a vast number of our Agreements we have granted 5th freedom rights.

Cra

Cranfield, MK43 0AL, United Kingdom

C. **Commercialization**

3) Do the country's regulations permit private sector participation (PSP) in the ownership and/or management of?

Airports ✓ ☐ YES ☐ NO

In terms of the Civil Aviation Act No 14 of 2010, PSP is not available at the moment in respect of International Airports. However there are some opportunities available in the management of Domestic Airports.

Airplanes ✓☐ YES ☐ NO

PSP is possible in the operation of Aircraft.

Kindly send your replies to one of the following:

Email	Fax
n.itani@cranfield.ac.uk	+961.1980006 Ext. 105

Please accept my deep appreciation for your cooperation and assistance.

Best regards

Nadine Itani
PhD Research Student
Cranfield University
United Kingdom

B.2.42 Switzerland

Cranfield UNIVERSITY

Cranfield, MK43 0AL, United Kingdom

Mr. Peter Müller
Directeur Général
Switzerland

Subject: Information Request

Reference: PhD Research [Department of Air Transport, University of Cranfield, United Kingdom], under Topic ***"Framework Development for Formulating Optimum Civil Aviation Strategies"***

Dear Mr. Müller,

Within the process of data collection for a PhD research on Civil Aviation Strategy Formulation, a representative sample of 140 countries in different world regions is composed.

We would like to collect information about three specific topics. The questions are listed below.

A. **Civil Aviation Institutional Framework**

1) Is the civil aviation regulator well established and separated in responsibilities from the aviation operators (airport(s) and/or air navigation service provider)?
☒ YES Number & date of Mandate/Decree:_____
☐ NO

B. **Air Transport Policy**

2.1 Is there a legal formal policy on granting 5th freedom traffic rights?
☒ YES ☐ NO

2.2 Have you granted fifth freedom traffic rights in any of the air service agreements (ASA) signed with another country?
☒ YES ☐ NO

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C. **Commercialization**

3) Do the country's regulations permit private sector participation (PSP) in the ownership and/or management of?

Airports ☒ YES ☐ NO

Airlines ☒ YES ☐ NO

Kindly send your replies to one of the following:

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n.itani@cranfield.ac.uk	+961.1980006 Ext. 105

Please accept my deep appreciation for your cooperation and assistance.

Best regards

Nadine Itani
PhD Research Student
Cranfield University
United Kingdom

B.2.43 United Arab Emirates

Cranfield UNIVERSITY
Cranfield, MK43 0AL, United Kingdom

Mr. Saif Mohammed Al Suwaidi
Director General
United Arab Emirates

Subject: Information Request

Reference: PhD Research [Department of Air Transport, University of Cranfield, United Kingdom], under Topic ***"Framework Development for Formulating Optimum Civil Aviation Strategies"***

Dear Mr. Al Suwaidi,

Within the process of data collection for a PhD research on Civil Aviation Strategy Formulation, a representative sample of 140 countries in different world regions is composed.

We would like to collect information about three specific topics. The questions are listed below.

A. Civil Aviation Institutional Framework

1) Is the civil aviation regulator well established and separated in responsibilities from the aviation operators (airport(s) and/or air navigation service provider)?
☒ YES Number & date of Mandate/Decree: FEDERAL LAW #4 OF 1996
☐ NO

B. Air Transport Policy

2.1 Is there a legal formal policy on granting 5th freedom traffic rights?
☐ YES ☒ NO

2.2 Have you granted fifth freedom traffic rights in any of the air service agreements (ASA) signed with another country?
☒ YES ☐ NO

Cranfield UNIVERSITY
Cranfield, MK43 0AL, United Kingdom

C. Commercialization

3) Do the country's regulations permit private sector participation (PSP) in the ownership and/or management of?

Airports ☒ YES ☐ NO

Airplanes ☒ YES ☐ NO

Kindly send your replies to one of the following:

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n.itani@cranfield.ac.uk	+961.1980006 Ext. 105

Please accept my deep appreciation for your cooperation and assistance.

Best regards

Nadine Itani
PhD Research Student
Cranfield University
United Kingdom

B.2.44 Uganda

Cranfield UNIVERSITY

Cranfield, MK43 0AL, United Kingdom

Mr. Rama Makuza
Managing Director
Uganda

Subject: Information Request

Reference: PhD Research [Department of Air Transport, University of Cranfield, United Kingdom], under Topic ***"Framework Development for Formulating Optimum Civil Aviation Strategies"***

Dear Ms. Makuza,

Within the process of data collection for a PhD research on Civil Aviation Strategy Formulation, a representative sample of 140 countries in different world regions is composed.

We would like to collect information about three specific topics. The questions are listed below.

A. Civil Aviation Institutional Framework

1) Is the civil aviation regulator well established and separated in responsibilities from the aviation operators (airport(s) and/or air navigation service provider)?
✓☐ YES Number & date of Mandate/Decree: **CAA Act No. 3 of 1994, Cap 354**

☐ NO

B. Air Transport Policy

2.1 Is there a legal formal policy on granting 5th freedom traffic rights?
✓☐ YES ☐ NO

2.2 Have you granted fifth freedom traffic rights in any of the air service agreements (ASA) signed with another country?
✓☐ YES ☐ NO

Cranfield UNIVERSITY
Cranfield, MK43 0AL, United Kingdom

C. Commercialization

3) Do the country's regulations permit private sector participation (PSP) in the ownership and/or management of?

Airports ✓☐ YES ☐ NO

Airplanes ✓☐ YES ☐ NO

Kindly send your replies to one of the following:

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n.itani@cranfield.ac.uk	+961.1980006 Ext. 105

Please accept my deep appreciation for your cooperation and assistance.

Best regards

Nadine Itani
PhD Research Student
Cranfield University
United Kingdom

B.2.45 United Kingdom

Cranfield UNIVERSITY

Cranfield, MK43 0AL, United Kingdom

Mr. Jonathan Moor
Director General of Civil Aviation
United Kingdom

Subject: Information Request

Reference: PhD Research [Department of Air Transport, University of Cranfield, United Kingdom], under Topic ***"Framework Development for Formulating Optimum Civil Aviation Strategies"***

Dear Mr. Moor,

Within the process of data collection for a PhD research on Civil Aviation Strategy Formulation, a representative sample of 140 countries in different world regions is composed.

We would like to collect information about three specific topics. The questions are listed below.

A. **Civil Aviation Institutional Framework**

1) Is the civil aviation regulator well established and separated in responsibilities from the aviation operators (airport(s) and/or air navigation service provider)?
☐ YES Number & date of Mandate/Decree: Civil Aviation Act 1971 *
☐ NO

Civil Aviation Act 1982* repealed following sections of 1971 Act 1-36, 61-70, Schedules 1-7 " " 9-11

B. **Air Transport Policy**

2.1 Is there a legal formal policy on granting 5th freedom traffic rights?
☐ YES ☑ NO

2.2 Have you granted fifth freedom traffic rights in any of the air service agreements (ASA) signed with another country?
☑ YES ☐ NO

* www.legislation.gov.uk - good epository of all Govt legislation + you can search + find above Acts

Cranfield UNIVERSITY
Cranfield, MK43 0AL, United Kingdom

C. **Commercialization**

3) Do the country's regulations permit private sector participation (PSP) in the ownership and/or management of?

Airports ☑ YES ☐ NO

Airlines ☑ YES ☐ NO

Kindly send your replies to one of the following:

Email	Fax
n.itani@cranfield.ac.uk	+961.1980006 Ext. 105

Please accept my deep appreciation for your cooperation and assistance.

Best regards

Nadine Itani
PhD Research Student

B.2.46 Venezuela

Gobierno Bolivariano de Venezuela | Vicepresidencia de la República | Instituto Nacional de Aeronáutica Civil | Bicentenario

PRE/CJU/GDI/2012

0020 Caracas, 25 ENE. 2012

Ciudadana
Nadine Itani.
Estudiante de Investigación PhD
Cranfield University. Reino Unido
Presente.-

Cumplo en dirigirme a usted, en la ocasión de conferirle la oportuna y adecuada respuesta, consagrada en el artículo 51 de la Constitución de la República Bolivariana de Venezuela, con relación a su comunicación, donde solicita información para la investigación del tema "Marco de desarrollo para formular estrategias óptimas de Aviación Civil", que realiza la Universidad de Cranfield, Reino Unido.

Ahora bien, una vez analizado el formulario recibido contentivo de tres (03) tópicos, le facilitamos las siguientes respuestas:

a) **Marco Institucional de Aviación Civil:**

1- ¿Esta el regulador de la Aviación Civil bien establecido y separado en sus responsabilidades de los operadores de aviación (aeropuerto(s) y/o proveedores de servicios a la Navegación Aérea?

_X_ Sí. Número y fecha del mandamiento/decreto: Ley de Aeronáutica Civil, publicada en la Gaceta Oficial de la República Bolivariana de Venezuela N° 38.226 de fecha 12 de junio de 2005. Reformada parcialmente mediante Ley publicada en la Gaceta Oficial de la República Bolivariana de Venezuela N°39.140 de fecha 17 de marzo de 2009.

___ No

b) **Política de Transporte Aéreo:**

2.1- ¿Existe una política legal formal para otorgar derechos de tráfico de quintas libertades?

___ Sí _X_ No

2.2- ¿Ha otorgado usted derechos de tráfico de quintas libertades en alguno de los acuerdos sobre servicios aéreos (ASA) suscritos con otro país?

_X_ Sí ___No

c) **Comercialización:**

2- ¿Permiten las regulaciones del país la participación del sector privado (PSP) en la propiedad y/o gerencia de:

_ Aeropuertos _X_ Sí ___ No

Av. José Félix Sosa con Av. Luis Roche, Urb. Altamira Sur, Torre Británica de Seguros, Piso 6, Caracas, Dtto. Capital, Zona Postal 1060. Telefax (0212) 277-265.77.89 – 277.45.31

_ Aerolíneas X Sí ___ No

Sin otro particular a que hacer referencia, reciba usted mi más alta estima y consideración.

Atentamente,

DRA. LIZ VIOLETA JUAREZ APONTE
CONSULTORA JURÍDICA

Providencia Administrativa N° PRE-CJU-117-11 de fecha 28/09/2011
Publicada en Gaceta Oficial de la República Bolivariana de Venezuela N° 39.768 de fecha 29/09/2011

"Independencia y Revolución"

R.J.F/M.M.C.V.M.G.

Appendix C

List of the parts of Jordan's Civil Aviation Law no. 41/2007

Part	Title
1	Definitions and Abbreviations.
5	Units of Measurement
11	General Rule Making.
19	Establishment of Safety Management System.
20	Civil Registered Aircraft Rules for Jordanian Government and Royal Jordanian Air Force.
21	Certification of Aircraft and Related Products, Parts and Appliances and of Design and Production Organizations.
M	Continuing Airworthiness Management.
CS	Certification Specifications
S25-1	Cockpit Door Security.
31	Manned Free Balloons. (Superseded by JCAR Certification Specifications)
39	Airworthiness Directives. (Superseded by JCAR 21)
43	Maintenance, Preventive maintenance, Rebuilding, and Alteration. (Superseded by JCAR Part M)
45	Identification and Marking. (Superseded by JCAR 21 Subpart-Q)
47	Aircraft Registration and Marking.
FCL1	Flight Crew Licensing (Aeroplane) Sections 1 and 2.
FCL2	Flight Crew Licensing (Helicopter) Sections 1 and 2.
61	Certification: Pilots, Flight Instructors and Ground Instructors.(Superseded on 30, June, by JCAR FCL1).
63	Certification: Flight Crewmembers other than Pilots.
65	Certification: Airmen other than Flight Crewmembers.
66	Personnel Licensing (Certifying Staff)
67	Medical Standards and Certification. Superseded by JCAR Part FCL3&Part MED
FCL3	Medical Certificate for Pilot Supersedes JCAR Part 67.
FCL4	Flight Crew Licensing (Flight Engineers Sections1 and 2).
MED	Class 3 Medical Certificate Supersedes JCAR Part 67
MMEL/MEL	Master Minimum Equipment Lists and Minimum Equipment Lists Sections 1 and 2.
ARO (1&2)	Aviation Recreation Organization
FSTD (A)	Airplane Flight Simulator Training Devices (Aeroplane) Section 1
71	Designation Of Class A and C Airspace; Air Traffic Service Routes; Designation Of Airways; and Reporting Points.
73	Special Use Airspace.
77	Objects Affecting Navigable Airspace.
OPS1	Commercial Air Transportation (Aeroplane) Section1 (Supersedes JCAR Parts 119,120,121, &135)Commercial Air Transportation (Aeroplane) Section 2
OPS3	Commercial Air Transportation (Helicopters)
91	General Operating And Flight Rules.
109	Regulated Agent .
138	Air ambulance service certification.
139	Certification and Operations of Land Airports.

140	Ground Handling Services
141	Pilot Schools (Superseded on 30 June, by JCAR FCL1).
142	Training Centres.
145	Approved Maintenance Organizations.
147	Maintenance Training Organization.
150	Airport Noise Compatibility Planning.
157	Notice of Construction, Alteration, Activation, and Deactivation of Airports.
171	Aeronautical Telecommunications Facilities.
172	Air Traffic Services Standards.
173	Air Traffic Services System.
175	Aeronautical Information Services.
176	Air Navigation Services (ANS) Training Centres.
177	Aeronautical Charts Service
183	Representatives of Chief Commissioner/CEO.
201	Economic Operating Licenses.
203	Charter Flight Operations.
205	Route Licensing Regulations and Processes.
207	Airport Economic Regulations.
209	Under development.
211	Under development.
301	Aviation Environmental Regulations.
2201	Aircraft Accident Investigation.

Source: (CARC, 2015) Available at: http://www.carc.jo/regulations/jcarslist